SD431.5
A2 P5

TIMBER MANAGEMENT PLAN

PIKE NATIONAL FOREST

General Statement
and
Working Circle Plan

July 1, 1962 - June 30, 1972

Colorado - Region 2

REGION TWO

FOREST SERVICE

U. S. DEPARTMENT OF AGRICULTURE

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GENERAL TIMBER MANAGEMENT STATEMENT

PIKE NATIONAL FOREST

Colorado

Region 2
1961

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Reviewed by:

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/s/ RWG	8/18/61	Multiple-Use Coordination

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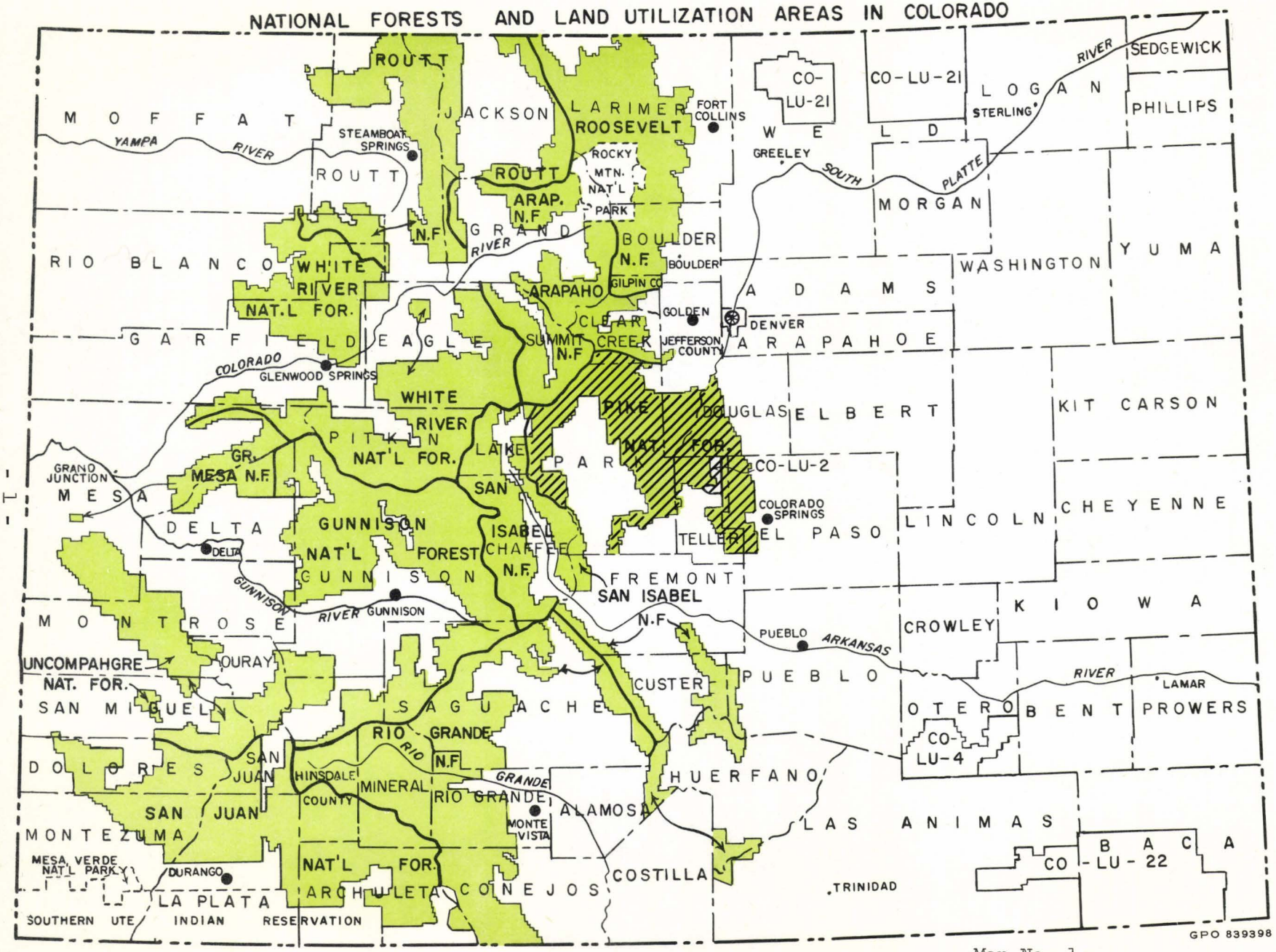

NATIONAL FORESTS AND LAND UTILIZATION AREAS IN COLORADO
ROUTT
JACKSON
LARIMER
ROOSEVELT
FORT COLLINS
CO-LU-21
CO-LU-21
LOGAN
STERLING
SEDGEWICK
PHILLIPS
RIVER
MOFFAT
YAMPA
RIVER
STEAMBOAT SPRINGS
ROUTT
ROUTT
ARAP.
N.F
ROCKY MTN. NAT'L PARK
GREELEY
SOUTH PLATTE
MORGAN
N.F
GRAND
RIVER
BOULDER
N.F
BOULDER
WASHINGTON
YUMA
RIO BLANCO
WHITE RIVER
NAT.L FOR.
ARAPAHO
GILPIN CO
ADAMS
GOLDEN
DENVER
CLEAR CREEK
JEFFERSON COUNTY
ARAPAHOE
GARFIELD
EAGLE
SUMMIT
N.F
COLORADO
GLENWOOD SPRINGS
WHITE
RIVER
PIKE
NAT'L FOR.
DOUGLAS
ELBERT
KIT CARSON
PITKIN
LAKE
PARK
CO-LU-2
GRAND JUNCTION
GR. MESA N.F.
MESA
SAN
COLORADO SPRINGS
CHEYENNE
DELTA
GUNNISON
NAT'L FOREST
ISABEL
CHAFFEE
N.F.
TELLER
EL PASO
LINCOLN
DELTA
GUNNISON
GUNNISON
RIVER
FREMONT
SAN ISABEL
N.F
MONTROSE
PUEBLO
ARKANSAS
CROWLEY
KIOWA
UNCOMPAHGRE
NAT. FOR.
OURAY
CUSTER
PUEBLO
RIVER
LAMAR
SAN MIGUEL
SAGUACHE
OTERO
BENT
PROWERS
RIO GRANDE
N.F
CO-LU-4
DOLORES
SAN JUAN
HINSDALE COUNTY
MINERAL
RIO GRANDE
RIO GRANDE
HUERFANO
SAN JUAN
ALAMOSA
MONTE VISTA
LAS ANIMAS
MONTEZUMA
MESA VERDE NAT'L PARK
DURANGO
NAT'L FOR.
ARCHULETA
CONEJOS
COSTILLA
TRINIDAD
BACA
CO-LU-22
LA PLATA
SOUTHERN UTE INDIAN RESERVATION
PIKE
NATIONAL
FOREST
and
WORKING
CIRCLE
GPO 839398

Map No. 1

INTRODUCTION

This General Timber Management Statement is one of the three parts of the timber management plan for the Pike National Forest.

The statement contains the general description of the Pike and its timber resource, its history, multiple-use coordination and long-range timber management objectives. In addition, the general statement includes the forest's overall objective for attaining the sustained yield capacity of its commercial timberland area in harmony with other forest uses. Because of the nature of the topics discussed, the general statement will need only infrequent revision.

The Pike Working Circle Plan contains the short-term objectives and programs. It includes calculation of the allowable cut, together with a 10-year cutting budget and road schedule. It also contains the reforestation and timber stand improvement programs and a discussion of multiple-use coordination and of protection needs. The working circle plan will be revised at 10-year intervals or more frequently if necessary to meet changing conditions.

The Timber Management Record is the third part of the forest's timber management plan and is an atlas record containing compartment maps and descriptions. Periodic changes in timber areas and volumes are posted to record sheets along with timber disposal data and information on stand improvement, reforestation, and protection accomplishments. The timber management record forms the basis for detailed planning compartment-wise and within the broader framework of the working circle plan.

LAND DESCRIPTION

The Pike National Forest is on the eastern slope of the Rocky Mountains in central Colorado. It includes the headwaters of the north and south forks of the South Platte River and also, along the south edge of the forest, several small tributaries of the Arkansas River. The forest is bounded on the west by the San Isabel National Forest at the crest of the Mosquito Range. It is bounded on the north, in general, by the Arapaho National Forest along the Continental Divide and by the divide between Clear Creek and the North Fork of the South Platte. The eastern boundary is, for the most part, the junction between mountains and plains. The south boundary is irregular but in general follows the line between forested land and the grasslands of high mountain parks, such as South Park. The forest includes portions of El Paso, Teller, Park, Clear Creek, Jefferson and Douglas Counties.

The entire forest, including Land Utilization Project CO-LU-2, comprises the Pike Working Circle which is further broken down into the Bailey, Lake George, Pikes Peak, South Park, and South Platte Blocks. These blocks correspond with the forest's five ranger districts and are further subdivided into 293 compartments averaging 4,320 acres gross and 3,733 acres net. Based only on national forest unreserved commercial forest land, the compartments average 2,905 acres each.

Table 1

Area by Ownership

Pike Working Circle

(Including CO-LU-2)

Block	Total Area Acres		Area of Unreserved Commercial Forest Land Acres				
	Gross	Net	National Forest	State	County & Municipal	Private	Total
Bailey	283,000	260,329	187,642	1,175	--	12,503	201,320
Lake George	239,335	206,439	157,869	3,196	--	13,124	174,189
Pikes Peak	278,161	231,223	197,742	935	5,478	22,005	226,160
South Park	205,406	163,183	98,449	1,220	--	19,430	119,099
South Platte	259,730	232,621	209,448	925	6,423	14,686	231,482
Total W.C.	1,265,632	1,093,795	851,150	7,451	11,901	81,748	952,250

Relation to Other Working Circles

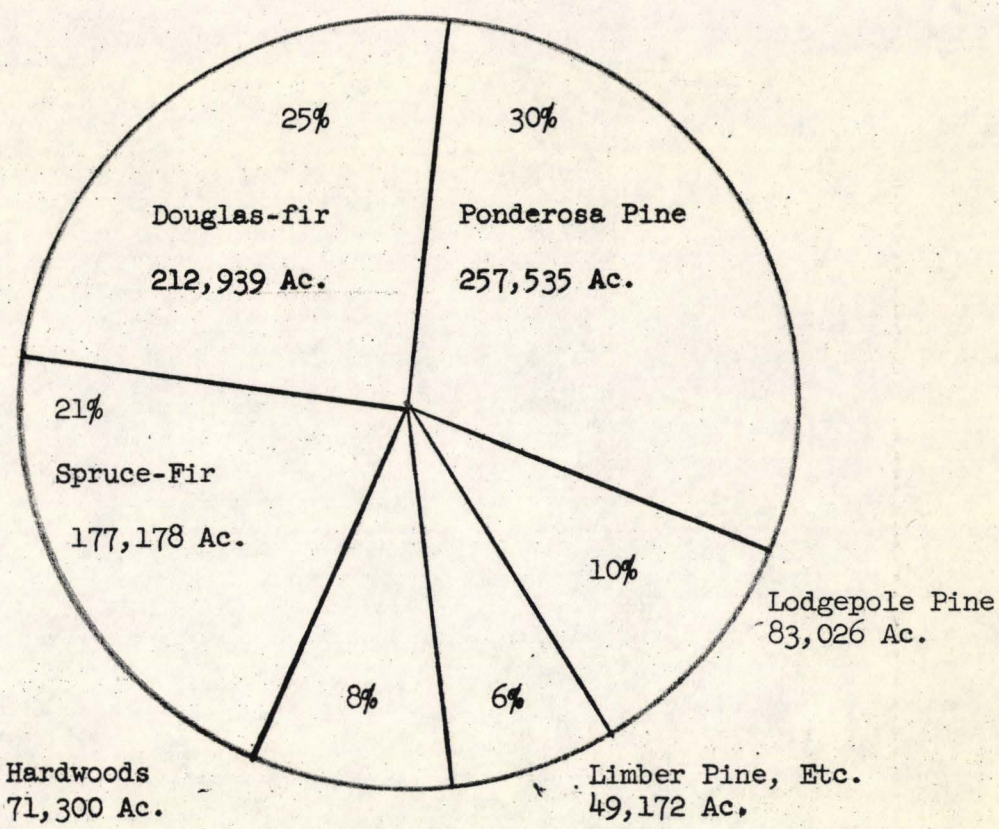
The Pike Working Circle does not bear a close relationship with those on the adjacent San Isabel and Arapaho National Forests. To the north and west the forests are divided by high mountain barriers which lack adequate transportation facilities for the most part. To the south, the San Isabel and the Pike are separated by too great distances. These factors preclude the interchange of timber operations in those directions. Interchange of timber operations with the San Isabel Working Circle may be practicable, however, to the southwest for timber located in the extreme southern portion of the South Park and Lake George Blocks.

Figure 1

Area of National Forest Commercial Forest Land

By

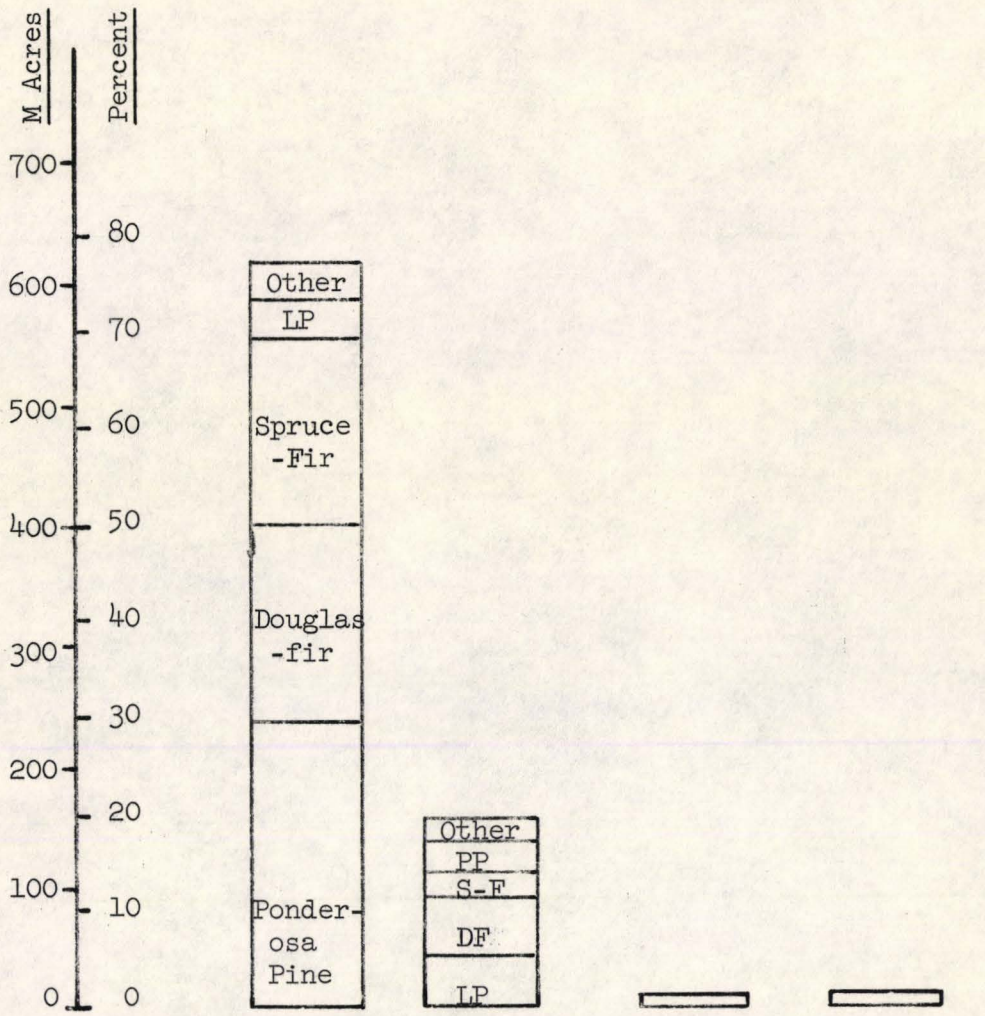
Timber Types



Total Softwoods - 779,850 Acres

Total Area - 851,150 Acres

Figure 2



Area of Coniferous Timber

By Stand-Size Classes and Major Types

Table 2

Area By Land Classification, Timber Type, Stand Size and Stocking Class

Commercial National Forest Land (Unreserved)

Timber Type	Large Sawtimber - Acres				Small Sawtimber - Acres			
	Well	Med.	Poor	Total	Well	Med.	Poor	Total
Douglas-fir			70	70	190	72,241	93,480	165,911
Ponderosa Pine						38,448	194,561	233,009
Lodgepole Pine						8,632	23,711	32,343
Limber Pine, et al						5,204	25,151	30,355
Spruce-Fir			30	30	30	65,911	78,424	144,365
Softwood Totals			100	100	220	190,436	415,327	605,983
% By Stand Size			100	100	0	31	69	100
% of Total				0				78
Hardwoods	-	-	-	-	-	-	-	1,010
Grand Total			100	100	220	190,436	415,327	606,993
Percentages				0				71

Timber Type	Poletimber - Acres				Seedling-Sapling - Acres				Nonstocked	Total	
	Well	Med.	Poor	Total	Well	Med.	Poor	Total	Acres	Acres	Percent
Douglas-fir	26,695	16,602	3,261	46,558	170	210	20	400	--	212,939	25
Ponderosa Pine	1,435	11,076	8,010	20,521	150	1,780	2,075	4,005	--	257,535	30
Lodgepole Pine	24,054	22,173	1,865	48,092	1,486	1,040	30	2,556	35	83,026	10
Limber Pine, et al	875	9,220	7,433	17,528	130	120	530	780	509	49,172	6
Spruce-Fir	3,790	12,621	6,587	22,998	30	160	599	789	8,996	177,178	21
Softwood Totals	56,849	71,692	27,156	155,697	1,966	3,310	3,254	8,530	9,540	779,850	92%
% By Stand Size	37	46	17	100	23	39	38	100	-	-	-
% of Total				20				1	1	100	-
Hardwoods	-	-	-	60,653	-	-	-	9,637	--	71,300	8%
Grand Total	56,849	71,692	27,156	216,350	1,966	3,310	3,254	18,167	9,540	851,150	100%
Percentages				26				2	1	100%	

Reserved Forest Land	6,890
Noncommercial Forest Land	76,318
Non-Forest Land	159,437
Grand Total for Forest	1,093,795

STAND CONDITION

Large fires and uncontrolled cutting during the last half of the 19th century depleted a large portion of the merchantable timber. The development of the mining and railroad industry utilized the more accessible stands of Douglas-fir, ponderosa pine and lodgepole pine. Most of the stands were clear cut for all usable material. This occurred prior to the timber land reserve withdrawal in 1892. Since the establishment of the national forest there have been no disastrous fires, and timber disposal in general has been limited to small sales. Site deterioration, due to the erosive soil, followed the early day timber depletion. The settlement of the country thus created the current extensive stands of timber that are now below rotation age. Overaged stands are intermixed with the younger stands, especially in the more inaccessible locations. Large areas of the forest are considered understocked; in fact, 15 percent of the coniferous stands are poorly stocked. In addition, there are 71,300 acres of aspen type that once supported coniferous stands.

Of the 780,000 acres of coniferous timber, 78 percent was typed as small sawtimber, 20 percent as poletimber, one percent seedling-sapling, and one percent nonstocked.

Ponderosa Pine Type

There are 257,535 acres of ponderosa pine type. This is 30 percent of the commercial forest land. Ninety percent of this type is of small sawtimber size and most of this is poorly stocked with sawtimber. The volume per acre for the sawtimber-size stands averages 1,782.59 board feet. Ninety-three percent of this stand size class is under rotation age. In the less accessible areas there are scattered pockets of overmature trees. This type occurs largely on the rocky, gravelly, low productive soils derived from the Pikes Peak granite.

Dwarfmistletoe is very common throughout the type. The Black Hills bark beetle population is currently increasing in the Lake George and South Platte Ranger Districts. Porcupine damage is largely in the plantations.

Douglas-fir Type

There are 212,939 acres of Douglas-fir type. This is 25 percent of the total commercial forest land. Seventy-eight percent of the type is classed as small sawtimber and twenty-two percent is of poletimber size. A little less than half of the type is considered poorly stocked. The volume per acre for the sawtimber stands averages 2,559.35 board feet.

Seventy percent of the sawtimber stand-size class is below the sawtimber rotation age with small stands of overmatured trees mixed through the type. The type was heavily cut over in the early days for mine timbers and railroad ties.

There has been an epidemic of spruce budworm (Choristoneura fumiferana, Clem.) in the type since 1957. The heaviest infestation has been on the Lake George District. It is now spreading northeasterly into the Cheesman Lake - Noddleheads - Indian Creek area of the South Platte District. This is a definite threat to the Christmas tree business on the forest. Funds have not been available for the control of the insect.

Spruce-fir Type

There are 177,178 acres of spruce-fir type. This is 21 percent of the commercial forest land. Approximately 85 percent of the volume is in Engelmann spruce and the remainder is largely subalpine fir. Eighty percent of the type is small sawtimber size. Approximately 53 percent of the type is poorly stocked with sawtimber-size trees. Volume per acre for the sawtimber type averages 6,899.37 board feet. Thirty-two percent of the sawtimber type is less than rotation age.

There has been no epidemic of Engelmann spruce bark beetles on the forest.

Lodgepole Pine

The lodgepole pine type makes up 10 percent of the commercial forest land, or 83,026 acres. One-third of the type is in the small sawtimber-size class and 58 percent is in poletimber-size class. The poletimber and seedling-sapling stands were fire generated and are overstocked. The average volume per acre for the sawtimber stands is 5,665.15 board feet and for the poletimber-size stands is 1,158.50 cubic feet.

Dwarfmistletoe is prevalent throughout the type.

Minor Types

Limber pine (Pinus flexilis) and bristlecone pine (Pinus aristata) are scattered throughout other types in the working circle and occasionally occur in small, pure patches on rocky ridges and exposed sites. These species are relatively unimportant for commercial use but form important cover types for watershed protection.

Blue spruce (Picea pungens) occurs in narrow stringers along stream bottoms. It is of high aesthetic and watershed value but of relatively low value commercially.

Aspen stands occur throughout the working circle but the trees are mostly scrubby and defective with little value for timber production. These stands are the result of extensive fires. Commercial species will be re-established, provided, (1) site conditions permit and (2) multiple-use considerations indicate that the area should be used for timber production, with its related benefits.

SUMMARY OF RESULTS FROM PREVIOUS MANAGEMENT PLANS

Previous timber management plans for the Pike National Forest provided for six working circles. These plans established an annual allowable cut of 5.0 million board feet. In 1956, the several working circles were programmed for consolidation into one as soon as a revised plan was prepared. An allowable cut of 4.7 million board feet was established for the interim period.

Overall objectives contained in these old working circle plans were to place the commercial forest lands in as productive a condition as possible in the shortest length of time, consistent with maximum protection of the watersheds.

The actual cut has fallen short of the allowable cut during the 1951 through 1960 period. See Figure 2 for a graphic comparison of the cumulative allowable and actual cut. The primary reasons for not meeting the allowable cut have been the lack of demand for the timber and the reduced cut by local, long-established operators who have reduced their cutting to family-type operations.

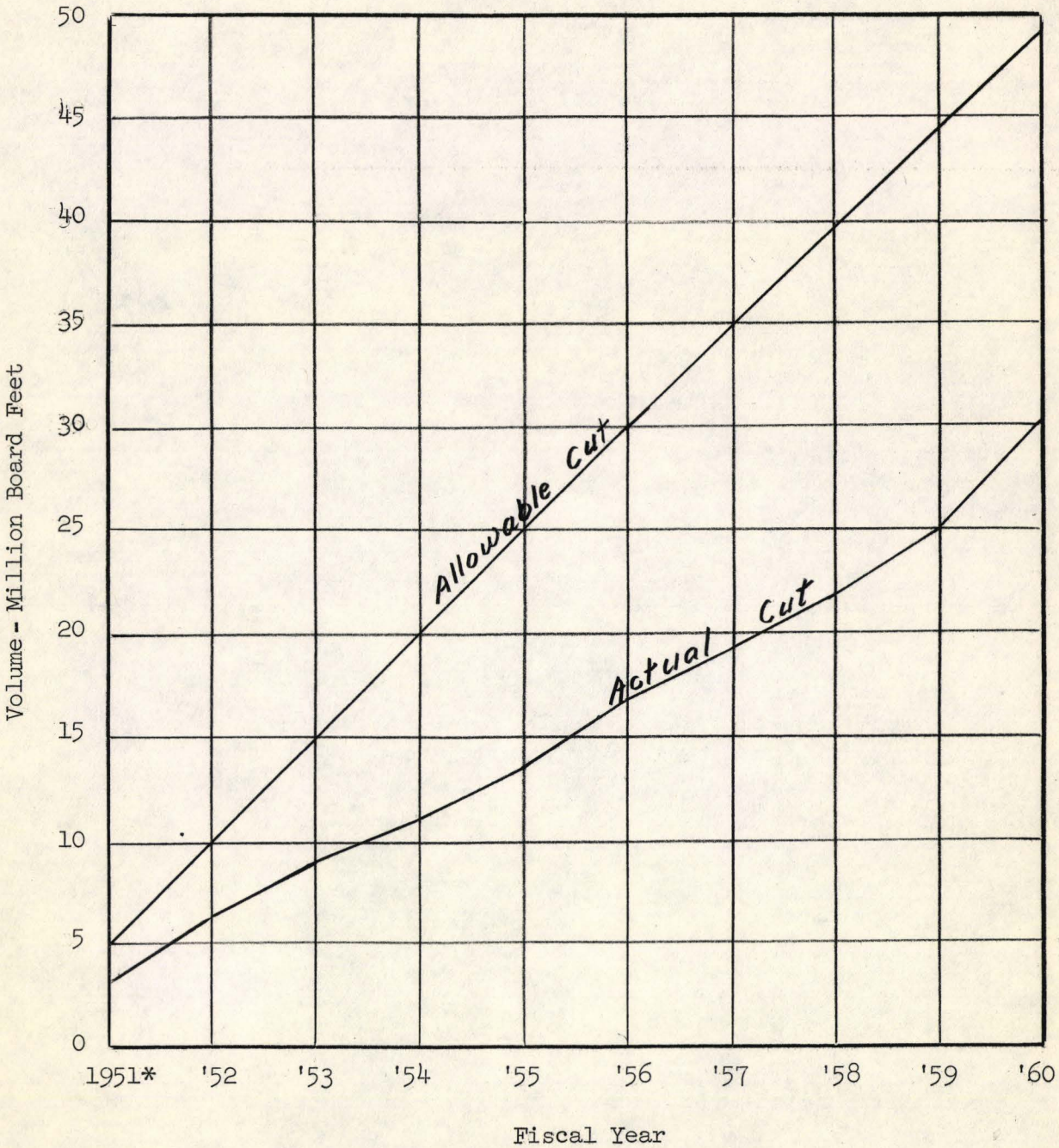
Table 3

Summary of Previous Plans

Working Circle	Date Approved	Area of Commercial Forest Land (M Acres)	Total Volume (MMBF)	Annual Allowable Cut (MMBF)
Bailey	--	122	113	1.000
Devil's Head	8/24/49	45	44	.965
Lake George	--	21	20	.600
Pikes Peak	10/17/52	58	45	.400
South Park	9/29/41	63	107	.900
South Platte	7/15/49	87	120	1.137
Forest Total		396	449	5.002

Figure 3

A Comparison of the Cumulative Total Allowable Cut
with the
Actual Cut for the Period
FY 1951 to 1960



* July 1, 1950 to June 30, 1951

SILVICULTURAL SYSTEM

Partial cutting and group selection have been the primary silvicultural practices used in all timber types since the establishment of the forest. Prior to that time, clear cutting was the general practice. Only within the last two years has clear cutting by patches been practiced in those spruce-fir stands occurring on stable soils. The major problems in the selectively cut stands are the lack of regeneration, particularly in the spruce-fir type, and the increase of dwarfmistletoe in the lodgepole pine type.

The choice of silvicultural practices used in the past has been strongly influenced by the fact that water has been considered the most important resource of the Pike National Forest. Marking for cutting, even on the most stable soils, has been done with the objective of retaining sufficient cover to prevent undue soil compaction with its consequent reduction of infiltration capacity. (See Watershed Management Plan, Pike National Forest, January 1952.)

Five erosion hazard classes were set up and the intensity of cutting varied from no restriction on cutting in Class I and II to no cutting in Class V.

Current marking guides are given in the working circle plan.

MANAGEMENT OBJECTIVES

The objective of this plan is to develop the commercial timber area of the Pike National Forest to its sustained yield capacity of high quality sawtimber as soon as possible, consistent with other uses. Empirical yield tables are not available; however, under management it is estimated that an average annual net growth of 150 board feet per acre is considered to be within reason. This would give a total annual yield of 80 million board feet on the estimated 550,000 acres of operable timber-producing lands. At the present time there is, however, unsatisfactory growth on all the commercial forest area due to unsatisfactory stocking.

To reach this long-term objective, all overmature, diseased, and under and overstocked stands must be put into good growing condition. Short-term (10-year) programs, directed toward securing desirable growth, will be included in the working circle plan. These programs will be guided by the following:

1. Convert wild stands to managed stands by the year 2000 A.D. All operable overaged sawtimber stands will be harvested during the 40-year converting period. The allowable cut will be reviewed and recalculated at least every 10 years. The length of the converting period may be adjusted to meet changing conditions.

2. Reduce infections of dwarfmistletoe and other diseases and maintain such infections at the lowest level practicable.

3. Develop a desirable distribution of age classes as soon as practical, preferably by the end of the first rotation.

4. Reduce overstocking in lodgepole pine stands by commercial and noncommercial thinning.

5. Continue reforestation programs that will:

   a. Assure adequate stocking on cutover areas within three years after cutting.

   b. Plant nonstocked and understocked lands during the next 20 years, including the re-establishment of coniferous species on aspen areas consistent with other uses.

6. Manage the Douglas-fir stands in compartments 208 to 213 and 225 to 231 for Christmas tree production; all other compartments will be managed for sawtimber. The objective will be to grow Christmas trees as the final product, and to assure a continuous supply of high quality trees.

7. Prevent epidemic outbreaks of destructive forest insects. Annual maintenance control work will be done to prevent explosive build-up of the Black Hills and Engelmann spruce bark beetles.

8. Confine fire damage to the long-term objectives stated in the forest's fire plan.

Much of the job of putting the timber stands into good growing condition will be done through sale area betterment work. It is essential, therefore, that timber sale activity be stepped up to accomplish this and other objectives. The rate of increase will be such that the forest will attain its full allowable cut by June 30, 1964.

Local industry, during the past 10 years, has harvested only 65 percent of the allowable cut. The expected increase in allowable cut will, therefore, require additional sawmill capacity.

A continuing public relations program in educating the public in proper silvicultural and timber management practices will be included in the forest's information and education plans. Such a program will include provisions for multiple-use demonstration areas which include timber production and harvest.

Adequate training of all forest employees engaged in timber management work will be given high priority in order to maintain a high standard of performance in the timber management field. On-the-job training, self-training, and group training methods will be used to help accomplish a high standard in the timber management field.

TRANSPORTATION

The principal markets for forest products are at Denver, Colorado Springs, and the population centers of the middle west. All logs are transported by truck from the woods to the mills, and the manufactured product is transported by truck to the railheads and markets in Denver and Colorado Springs.

Highway U. S. 285 traverses the west side of the forest in a general southwest-northeast direction, and Highway U. S. 87 services the east side of the forest and runs generally north-south in direction. Highway U. S. 24 is the major east-west highway and services the south end of the forest. The northern end is serviced by the State and county road networks. (See compartment map for the principal road network.)

The forest development road system, however, is inadequate for the timber harvest, and additional roads will need to be constructed. Such roads will receive high priority in planning and construction.

Table 4

Summary of the Pike N. F. Forest
Development Transportation Plan as of June 30, 1960

Primary Forest Value	Miles		
	Existing	Additional Needs	Total
Timber	225	998	1,223
Admin. and Fire	322	1,820	2,142
Other Resources	264	20	284
Total	811	2,838	3,649

Timber access roads will be constructed by the timber purchaser, supplemented, as necessary, by Forest Service funds to assure proper standards and location to serve all national forest resources and activities within the compartment.

The working circle plan will schedule, in the cutting budget, the roads needed for the removal of the timber. Road plans will be completed and rights-of-way obtained not less than one year and preferably two years prior to the timber offering.

REFORESTATION

Over the entire working circle, natural restocking following the early-day logging and fires has been very spotty. In some areas, and particularly in the South Park Block, thousands of acres of pure stands of aspen have resulted mostly from old burns. In the ponderosa pine areas in the eastern part of the working circle, restocking has been very poor, except for the northern end of the Rampart Range where dense stands of ponderosa pine, Douglas-fir, and lodgepole pine reproduction followed the clear-cutting and fires.

Intensive reforestation programs began on the forest about 1913 and continued through the Civilian Conservation Corps era. Thousands of acres have been reforested in the Pikes Peak Block including the slopes of Pikes Peak, the Mt. Herman burn, and lands purchased under the Bankhead-Jones Farm Tenant Act. Some of the plantations in this block have been extremely successful and have resulted in re-establishing well-stocked forest stands. Other plantations established with varying degrees of success are the Badger Flats area of the Lake George Block, the Salt Creek area of the South Park Block, and the South Platte drainage and its tributaries.

Very little clear cutting of Engelmann spruce and lodgepole pine has been done to date within the working circle and little if any information is available to indicate the degree to which natural reproduction will ordinarily restock the clear-cut areas. Timber stand improvement plans for all sales in these types will, therefore, contain provisions for artificial reforestation measures that will restock the sites or supplement natural reproduction as necessary. For ponderosa pine, this will be done one year after logging; for other types, within three years after logging.

Existing reforestation reconnaissance surveys will be re-evaluated and additional surveys will be made by 1963 to determine the location and extent of understocked areas. For such areas, reforestation plans will be up-dated or prepared by December 31, 1963 and will show the needs by compartments.

TIMBER STAND IMPROVEMENT

During the Civilian Conservation Corps program, the major stand improvement job done was the thinning for Christmas trees in the Douglas-fir stands of the South Platte and Pikes Peak Blocks. In addition, several areas of young lodgepole pine stands in the Deer Creek drainage of the Bailey Block were thinned. Since the C.C.C. program, most commercial timber sales have included provisions under the Knutson-Vandenburg Act for thinning overstocked stands of all commercially important species.

Immature lodgepole pine stands are generally too dense for good growth. For sapling stands, commercial thinning will generally be relied upon to maintain proper stocking. Whenever possible, cutting in immature stands will be done through commercial sales. Timber stand improvement plans will be prepared in all timber sales and Knutson-Vandenburg Act deposits will be taken for accomplishing timber stand improvement work. Methods applied will be in accordance with instructions in FSH 2470.

PROTECTION

Dwarfmistletoe in ponderosa and lodgepole pine has caused serious damage in the working circle. Sale area betterment plans will provide for the control of this disease.

Insects have caused serious mortality in ponderosa pine and Douglas-fir stands. Currently, the Black Hills bark beetle (Dendroctonus ponderosae) is in the epidemic stage south and west of Lake George, northwest of Cheesman Lake, and west of Bailey. Since 1957, the spruce budworm has been causing damage to over 100,000 acres of Douglas-fir in the Lake George and South Platte Blocks. This insect is now spreading into the valuable Christmas tree production areas in the vicinity of Indian Creek and the northern end of the Rampart Range. (See Map No. 2 for bark beetle and budworm infested areas.)

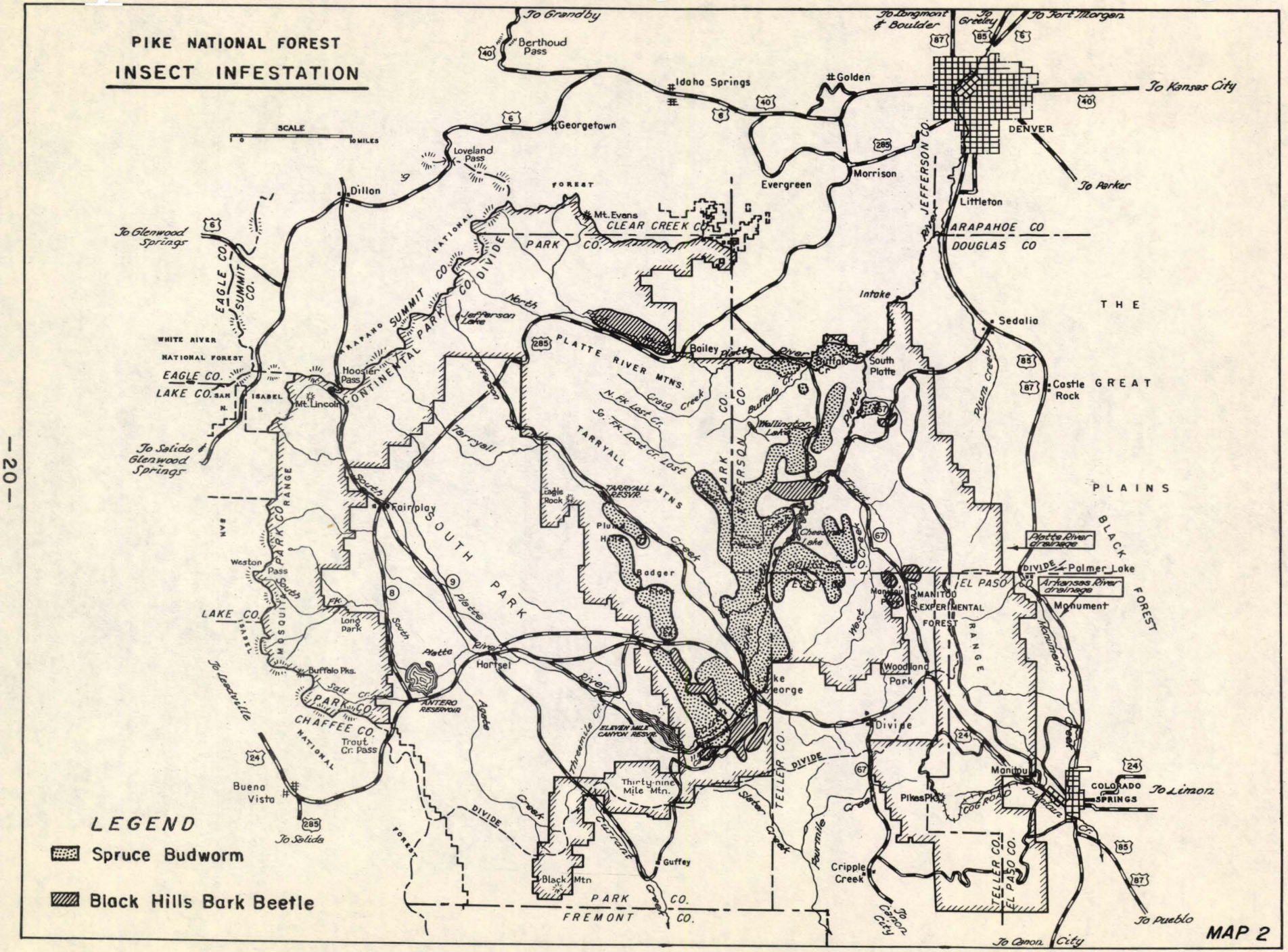
A Black Hills bark beetle control project is scheduled for the 1961 season. A control project for the spruce budworm will be scheduled as soon as funds are available. Insect detection programs will be conducted annually, and control programs will be conducted as projects are authorized.

Porcupine damage has been minor except in plantations. Control projects in addition to routine forest-wide control by forest employees, will be conducted in areas and plantations where porcupines threaten to cause extraordinary damage.

Prior to the establishment of the forest, numerous large fires occurred. In the South Park Block alone, approximately 35 percent of the block was burned over in the early days. In 1879 the Mt. Herman burn of 80,000 acres occurred. At the same time a fire of about 6,000 acres burned the upper Buffalo Creek drainage. Other large burns occurred in the Pikes Peak, Phantom Creek, Cedar Mt., and Trail Creek areas.

Since establishment of the forest, fire losses have been kept to an acceptable level. Fire protection, however, is becoming critically important with the increase in the use of the forest.

Damage from wind has been relatively minor. The last damage occurred in 1957 in the Little Scraggy Peak area of the South Platte Block where 600 acres of ponderosa pine and Douglas-fir were damaged by wind and hail. Salvage sales will receive high priority in all wind-damaged stands to lessen the possibility of insect build-up.


PIKE NATIONAL FOREST
INSECT INFESTATION
SCALE
0
10 MILES
To Grandby
Berthoud Pass
Idaho Springs
Golden
To Longmont & Boulder
To Greeley
To Fort Morgan
To Kansas City
DENVER
To Parker
Littleton
Georgetown
Loveland Pass
Dillon
Evergreen
Morrison
JEFFERSON CO.
ARAPAHOE CO
DOUGLAS CO
CLEAR CREEK CO.
Mt. Evans
FOREST
NATIONAL
PARK CO.
CONTINENTAL DIVIDE
To Glenwood Springs
EAGLE CO.
SUMMIT CO.
WHITE RIVER NATIONAL FOREST
EAGLE CO.
LAKE CO.
SAN ISABEL F.
SAN ISABEL N.
Hoosier Pass
Mt. Lincoln
ARAPAHO
SUMMIT CO.
PARK CO.
Jefferson Lake
North Jefferson Cr.
PLATTE RIVER MTNS.
Bailey
Platte River
Buffalo Cr.
Buffalo
South Platte
Intake
Sedalia
THE GREAT PLAINS
Castle Rock
Plum Creek
Craig Creek
N. Fk Lost Cr.
So. Fk. Lost Cr.
Lost
Tarryall
TARRYALL MTNS.
Wellington Lake
Trout
Platte
To Salida & Glenwood Springs
Fairplay
South
PARK RANGE
Eagle Rock
TARRYALL RESVR.
Platte River drainage
DIVIDE
Palmer Lake
Arkansas River drainage
Monument
Weston Pass
South Fk.
Badger
Hartsel
SOUTH PARK
Platte River
Long Park
Buffalo Pks.
Salt Cr.
PARK CO.
CHAFFEE CO.
NATIONAL
Trout Cr. Pass
ANTERO RESERVOIR
Agate
Threemile Cr.
ELEVEN MILE CANYON RESVR.
Lake George
Woodland Park
MANITOU EXPERIMENTAL FOREST
EL PASO
TELLER CO.
Divide
Manitou
COLORADO SPRINGS
To Limon
Pikes Pk.
COG ROAD
Fountain Cr.
Buena Vista
To Leadville
To Salida
Thirty-nine Mile Mtn.
Currant Creek
Slater Creek
Fourmile Creek
Cripple Creek
Guffey
Black Mtn.
PARK CO.
FREMONT CO.
To Canon City
To Pueblo
MAP 2
LEGEND
Spruce Budworm
Black Hills Bark Beetle

LAND PROBLEMS

Rights-of-Way

Rights-of-way needed for the timber harvest have not been a serious problem in the past, nor are rights-of-way considered to be a problem for the future timber harvest in the remaining areas of large uncut volumes in the vicinity of Craig Park, Michigan Creek, and the Buffalo Peaks. Minor problems do exist where rights-of-way need to be obtained to facilitate harvest of small blocks of timber.

All rights-of-way over private land needed for access to timber will be secured well in advance of cutting. Working circle plans will contain a schedule for obtaining rights-of-way, and any special problems likely to be encountered will be reported in these plans as applicable.

The objective of the working circle plan will be to obtain rights-of-way in and for the United States for all roads needed for use and development of the timber resources of the national forest. Such road needs will be coordinated with those for other resources.

The Forest Service will not invest in roads on county-owned rights-of-way unless the pattern of settlement, or approved plans for future public highways, give reasonable assurance that the county will permanently retain them as public roads. The same principle will apply to rights-of-way obtained by the State.

Mining Claims

The South Park Block contains the bulk of both the patented and unpatented mining claims within the working circle. The complex pattern of these claims has created problems in the management of the timber resource. However, completion of the Surface Rights Determination Project will facilitate management of the vegetative resources and help alleviate right-of-way problems on the unpatented claims.

COORDINATION WITH OTHER RESOURCES AND USES

The commercial forest lands in the Pike National Forest lie within the "Intermediate Zone" as described in the Land Management Plan for the Eastern Colorado Subregion. Management priorities in this zone are primarily for water and timber. The overall management objectives, direction, and priorities for all zones are provided in the Eastern Colorado Subregion Land Management Plan. District land management plans and functional plans will be consulted for more detailed policies and procedures.

Water

The Pike National Forest is the watershed source of all or part of the domestic water supply for several communities, towns, and cities, including Colorado Springs and Denver. Watershed management on the forest has as its objective the increase of and maintenance of both the productive and the hydrologic, or water-regulating, functions of the land. Under these conditions, timber cutting practices will be applied which will maintain or enhance regulated water yields and protect the water resource.

The forest lands of the Pike have been classified, by types, as to erosion hazard. Variables are elevation, soil class, slope and exposure. This classification, as shown on the following page, will be the primary guide in determining the areas on which timber can be removed and the degree of cutting to be applied.

Table 5

EROSION CLASSIFICATION

Erosion Hazard Class	Forest Type	Elevation Zone 1/	Soil Class 2/	Slope Percent	Exposure (Compass)	Timber Harvesting Restrictions
I (Slight)	Spruce-fir	Upper	Stable	All	All	None
	Lodgepole	Upper	Stable	0-50	All	
	Douglas-fir	Lower	Stable	0-50	North	
	Aspen	Both	Stable	All	All	
II	Spruce-fir	Upper	Unstable	All	All	None
	Lodgepole	Upper	Stable	50+	All	
	Lodgepole	Upper	Unstable	0-50	All	
	Douglas-fir	Lower	Stable	All	East	
	Douglas-fir	Lower	Unstable	0-50	All	
	Ponderosa pine	Lower	Stable	0-50	All	
	Ponderosa pine	Lower	Unstable	0-10	All	
	Aspen	Upper	Unstable	All	All	
	Aspen	Lower	Unstable	0-50	All	
III	Lodgepole	Upper	Unstable	50+	All	Group Selection Small Groups or Partial cut
	Douglas-fir	Lower	Unstable	50+	All	
	Ponderosa pine	Lower	Stable	50+	All	
	Ponderosa pine	Lower	Unstable	10-30	All	
	Aspen	Lower	Unstable	50+	All	
IV	Ponderosa pine	Lower	Unstable	30-60	East	Partial cut
V (Extreme)	Ponderosa pine	Lower	Unstable	60+	East	No Cutting
	Ponderosa pine	Lower	Unstable	30+	South & West	

1/ Lower = Below 8500 to 9,000
Upper = Above 8500 to 9,000

2/ Soil Class Definitions (See following, from Report of March 3, 1945, by H. G. Wilm, "Watershed Aspects of Logging on the Roosevelt and Pike National Forests.")

Soil Class Definitions

1. Unstable Soils

   a. Derived from granites with a high feldspar content, especially the redder granites which are colored with iron stain. These soils and their parent rock dominate the Front Range portion of the Pike National Forest. Like their parent rock, the soils are characterized by angular, reddish crystals, often conspicuous as an erosion pavement on the soil surface. Since the feldspar which forms a large part of this granite eventually decomposes into clay, the angular gravel is usually contained in a reddish matrix of smaller particles ranging in size down to clay. Especially on very steep slopes, however, the "soil" is often formed almost entirely of gravel and is therefore unusually porous. Under a good plant cover these soils develop high capacities to absorb water (infiltration capacities) and generally erode only to a minor extent. When the vegetation (either timber or herbaceous) is depleted or removed, however, they are perhaps the most erosive soils in the Front Range.

   b. Derived from soft sedimentary (layered) rocks, such as shales and the "Red Beds" of Manitou Park and South Park. Shale soils are generally dark and fine textured, often containing flat, platey rock fragments; red-bed soils are also rather fine-textured forming red or maroon-colored sandy loams or sandy clay loams.

      When the vegetation is seriously depleted, surface runoff causes extensive sheet erosion from these soils, accompanied by conspicuous gullies in valley bottoms.

   c. Derived from volcanic rocks. These soils are typified by extensive areas in southern South Park. Like their parent material, they are generally grayish to dark in color and fine textured; they commonly contain coarse fragments of volcanic rock. In erosion characteristics they resemble shale soils.

2. Relatively Stable Soils

a. Derived from granites which have a high content of quartz and are generally light in color. These soils are gravelly to sandy, usually containing many quartz crystals and fragments; they decompose into gravelly or sandy loams. These soils erode badly only under severe mistreatment, such as the use of steep, poorly drained logging roads.

b. Derived from most metamorphic rocks. These soils are, perhaps, most easily recognized by outcrops of fragments of their parent material; striated, often severely folded and twisted rocks, generally dark in color and commonly containing mica flakes. The soils themselves are usually dark, quite gravelly, and porous. As a class they are rather more erosive than "light-granite" soils, but much less so than "unstable" soils.

c. Derived from hard sedimentaries, such as the Dakota sandstone and hard sandy limestones. Soils of this kind are generally reddish or light in color, sandy and porous; and they usually contain a good deal of gravel and coarse rock material. The parent rock is conspicuously layered in belts of vari-colored rock. While these soils are only moderately erosive, they can deliver large quantities of silt when badly mistreated.

Timber removal policies within the hazard classes will be as shown by the forest marking guides and covered in the working circle plan. Such policies will agree with those stated for each soil type and erosion class in the Forest Watershed Management Plan and with related decisions in the multiple-use plans.

Range

Livestock will be excluded from plantations when necessary to prevent grazing damage to the planted trees.

Wildlife

There has been no conflict between wildlife and timber management activities. Openings beneficial to wildlife will be left in all plantations. The re-establishment of coniferous species on aspen sites will consider the effect such planting will have on wildlife and, if necessary, adequate provisions for protection of the wildlife resource will be made.

Planting on winter game ranges will be deferred until the stocking by wildlife can be brought into balance with the carrying capacity of the range available.

Before coniferous species are re-established on winter game ranges, the total effect on the national forest will be considered from a multiple-use standpoint.

Recreation

Roadside zones, Waterfront Zones and Recreation Sites. Timber cutting, other than for the removal of dead or down material, within occupancy zones including designated roadside zones of highways and of roads important for recreational use will be in accordance with instructions in FSH 2413.22 and in the Timber Management Guides, FSH2-2442.8. In such areas, all logging debris will be disposed of by removing cull logs and by complete abatement of slash, preferably by chipping. Logging camps, mills, or other structures will not be allowed within these zones or sites.

When cutting is to be done within such areas, other than cutting of dead or hazardous trees, the timber and recreation staff men shall mutually develop the pre-sale or other prescription.

Other Land Use

Logging roads will be located so as to avoid parks and meadows. If this is not practicable, special provisions will be applied in the construction to protect aesthetic and other values resulting from such construction.

A travel influence zone will be included along logging roads which provide access to present or potential recreation areas.

SUPPORTING DATA

History

The history of cutting on the Pike Forest goes back to the 1860's when gold was discovered near Fairplay. The early timber operations were on a small scale and were sufficient only to supply the mines and a few stockmen and ranchers. Logging was never carried on far from mining operations.

In the eastern part of the forest, prior to establishment of the South Platte, Plum Creek, and Pikes Peak Timberland Reserves in 1892, logging operations took a heavy toll of the easily accessible timber. The extension of the Denver, South Park, and Pacific Railroad to Bailey by 1878 caused an increase in logging activity to large-scale proportions. Timber along both forks of the South Platte River as far as Cheesman Reservoir and including the Buffalo Creek drainage as far as Wellington Lake was completely removed. This cutting was generally preceded by fires purposely set in order to reduce the cost of logging operations.

Large-scale lumbering began in the western part of the forest with the extension of the railroad to Fairplay and Leadville in the 1880's. During this period, almost complete depletion of the timber stands occurred in the vicinity of Hoosier, Boreas, and Kenosha Passes for ties and mining timber. There were from 20 to 40 sawmills with capacities of from five M B.F. to 25 M B.F. daily. An estimated three-fourths of a billion feet of timber was removed in the 20-year period prior to establishment of the forest. With most of the accessible and best timber removed by 1900, the logging industry slackened perceptibly. Table No. 6 shows the forest's timber cut and sold history from F.Y. 1915 through F.Y. 1960.

Protection and controlled management of the resources following the establishment of the forest has resulted in improvement of conditions on the forest lands.

Table No. 6

TIMBER CUT AND SOLD SINCE 1915

Pike National Forest

Year	Timber Sold: Sales	MBF	Value	Avg. Sell. Price	Timber Cut: MBF	Value	Avg. Sell. Price	Receipts
1915 F.Y.	154	14,538	28,259	1.93	5,577	10,692	1.92	12,717
1916 F.Y.	233	11,646	17,534	1.51	6,808	12,132	1.78	15,646
1917 F.Y.	101	5,610	8,273	1.47	4,121	6,564	1.59	5,228
1918 F.Y.	88	5,566	9,464	1.70	6,848	9,387	1.37	11,118
1919 F.Y.	81	5,097	9,502	1.86	5,191	8,816	1.70	8,058
1920 F.Y.	99	4,182	6,528	1.59	3,748	6,372	1.70	6,288
1921 F.Y.	81	2,193	7,545	3.46	3,430	5,472	1.60	4,960
1922 C.Y.	78	647	1,817	2.92	1,459	3,535	2.42	4,556
1923 C.Y.	130	5,187	15,643	3.02	2,427	5,146	2.12	5,058
1924 C.Y.	98	3,728	10,430	2.80	2,843	7,755	2.73	10,203
1925 C.Y.	139	2,797	9,566	3.42	4,397	12,401	2.82	11,617
1926 C.Y.	105	6,744	20,349	3.02	3,709	7,825	2.11	14,238
1927 C.Y.	160	7,948	16,580	2.09	3,861	9,600	2.49	13,389
1928 C.Y.	202	3,685	8,498	2.31	5,383	12,369	2.30	14,709
1929 C.Y.	229	7,983	19,461	2.44	7,029	17,121	2.44	19,107
1930 C.Y.	309	8,391	17,752	2.12	9,181	18,948	2.06	19,242
1931 C.Y.	430	5,992	12,972	2.16	6,736	14,032	2.08	11,066
1932 C.Y.	760	2,588	4,584	1.77	5,534	11,567	2.09	10,493
1933 F.Y.	893	4,657	8,716	1.87	5,322	10,849	2.04	9,368
1934 F.Y.	1,386	13,305	24,187	1.82	7,844	14,196	1.81	17,840
1935 F.Y.	1,482	7,392	13,499	1.83	11,671	21,825	1.87	21,744
1936 F.Y.	1,537	12,479	27,521	2.21	10,120	21,657	2.14	24,580
1937 F.Y.	1,444	8,161	20,518	2.51	10,518	23,653	2.25	39,664
1938 F.Y.	1,297	8,532	22,102	2.59	7,946	19,617	2.47	21,930
1939 F.Y.	1,292	5,536	14,136	2.55	7,190	17,324	2.41	18,923
1940 F.Y.	1,310	6,694	16,115	2.41	6,737	17,969	2.67	19,029
1941 F.Y.	662	6,958	16,725	2.40	5,646	14,958	2.65	17,151
1942 F.Y.	549	7,842	21,159	2.70	4,873	11,551	2.37	12,252
1943 F.Y.	362	2,325	5,361	2.31	3,761	8,207	2.18	15,576
1944 F.Y.	327	2,503	5,455	2.18	4,829	10,359	2.15	14,282
1945 F.Y.	243	7,343	27,359	3.73	4,074	10,674	2.62	12,445
1946 F.Y.	301	1,576	4,260	2.70	3,158	8,844	2.80	14,958
1947 F.Y.	212	2,656	12,274	4.62	3,776	13,679	3.62	15,684
1948 F.Y.	202	1,165	4,209	3.61	2,850	11,947	4.19	19,192
1949 F.Y.	173	501	1,257	2.51	2,682	10,884	4.06	11,517
1950 F.Y.	240	2,885	13,238	4.59	3,304	14,595	4.42	19,199
1951 F.Y.	179	2,520	15,576	6.18	3,111	12,649	4.07	17,267
1952 F.Y.	165	4,765	26,379	5.54	1,603	9,620	6.00	16,237
1953 F.Y.	99	845	3,237	3.83	2,570	13,977	5.44	19,373
1954 F.Y.	92	3,700	15,948	4.31	2,825	15,059	5.35	20,911
1955 F.Y.	63	2,318	13,189	5.69	2,610	12,963	4.97	14,189
1956 F.Y.		10,198	53,095	5.21	2,651	12,532	4.73	26,930
1957 F.Y.	76	990	1,682	1.70	4,566	20,600	4.51	24,450
1958 F.Y.	114	1,452	5,608	6.80	4,011	18,501	4.61	19,618.91
1959 F.Y.	176	11,973	50,831	4.25	5,349	28,165	5.27	26,685.59
*1960 F.Y.	158	3,285	29,863	9.09	3,405	31,743	9.32	52,357.61

*K-V included in values and receipts as of F.Y. 1960

Communities and Population

The largest population centers are located adjacent to the foothills along the eastern edge of the forest. Metropolitan Denver with approximately 900,000 people, and Colorado Springs with approximately 100,000 population, are the two largest communities served by the forest. Other communities within and adjacent to and partially dependent on the forest are Monument, Castle Rock, Woodland Park, Divide, Cripple Creek, Florissant, Lake George, Hartzel, Jefferson, Como, Fairplay, Grant, Shawnee, Bailey, Evergreen,and Buffalo Creek. Numerous other very small communities are also scattered throughout the forest.

Forest Industries

The demand for sawtimber and forest products has remained fairly stable during the last decade. The nature of past timber sale offerings which have primarily been made in isolated stands missed during the early-day logging has encouraged the establishment of small logging operations. Many operators supplement their national forest operations with timber cut from privately owned lands within and adjacent to the working circle.

The following is a list of operators now cutting within the working circle:

Name of Operator	Location	Annual Rated Capacity M B.F.	Annual Actual Production M B.F.
Brown 1/	Lost Park	3,000	3,000
Overholt	Grant	2,000	800
Eos	Kenosha Pass	2,000	500
Stapish	West Creek	2,000	500
Frank	Monument	3,000	500
Achord 2/	Florissant	2,000	1,000
McKinney	Fairplay	1,000	200
3/	Lake George	300	100
	Totals	15,300	6,600

1/ New operator established in 1960

2/ Cutting on private land

3/ Cutting on State land

Physiography

Topography

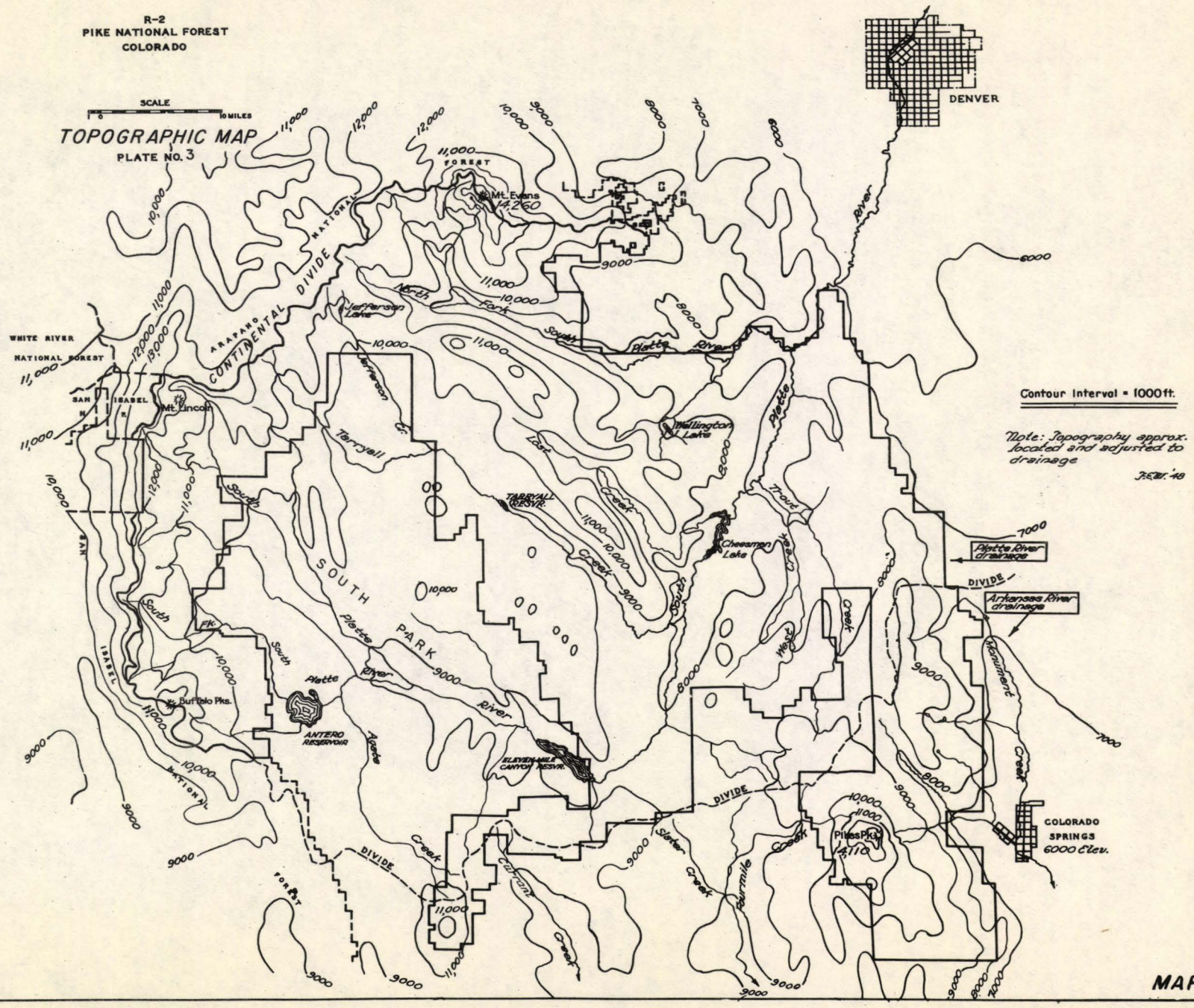
The Rampart Range, which is the east part of the Front Range, rises abruptly from an elevation of 6,300 feet at the edge of the Great Plains to an elevation of 9,348 feet. The entire area varies from open valleys bordered by moderate slopes to precipitous mountain ranges with deep, narrow canyons, high ridges, and steep slopes. The boundaries were drawn so as to exclude, but nearly surround, the larger areas of nearly level open land such as South Park. Elevations range from about 6,000 feet where the South Platte River emerges from the forest to over 14,000 feet at Pikes Peak, Mt. Lincoln, and Mt. Evans. Approximately 80 percent of the forest is at elevations between 7,000 and 11,000 feet. (See Map No. 3, Topographic Map.)

Soils

The soil pattern is complex. Most of the eastern two-thirds of the forest is coarse raw soil of decomposed granite origin, with varying mixtures of loam. These are immature soils and are low in organic matter. Their depths vary widely. On some of the steeper slopes the top soil is very thin; on gentler slopes the depth ranges from a thin feather edge to as much as eight inches. In many of the valleys and arroyos, there are bottom land fills which vary in depth from a few inches to three feet or more. These granitic soils are coarse and very porous, hence they absorb water readily. Such soils break down easily and are very susceptible to erosion. The coarse, angular gravels intermingled with granitic soils are effective agents of erosion, as they are particularly abrasive when moving with rapidly flowing flood waters in wet, softened drainage channels. Gullies, once started, expand in width, depth, and length at alarming rates. These granitic soils are low in fertility, and for this reason vegetative recovery may be expected to be slow.

Soils in the west central and western parts of the forest have developed from mica schist. They have loam or clay-loam texture and the surface layers are fairly deep. The organic matter content is high and they are relatively resistant to erosion. Such soils are fertile and are capable of producing a good vegetative cover when properly managed. Despite these favorable characteristics, however, these soils are subject to damage when the protective cover of vegetation is depleted. This is particularly true on the steeper slopes. These soils are underlaid with permeable subsoils, below which are rocks of good porosity. This combination is favorable for watershed purposes.

R-2
PIKE NATIONAL FOREST
COLORADO



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In the southwest corner of the forest, the grassland soils have developed from basalt. Top soil layers are deep; they are high in organic matter, are fertile, and will support a good cover of vegetation. Sub-soils are friable and permeable. These soils are naturally resistant to erosion where they have a protective cover of vegetation. The fact that critical sheet and gully erosion exists on some of these areas is due to excessive long-continued overgrazing, past unwise cutting of timber, and to fire, all of which have depleted the cover of vegetation.

(See Map No. 4, Soils Map.)

Climate

The climate of the Pike National Forest is typified by warm, dry summers and long, severe winters.

The average annual precipitation is from 12 to 15 inches at elevations below 10,000 feet, of which 40 percent comes as rain in July and August. At the higher elevations, precipitation ranges up to 30 inches and comes mostly in the form of snow.

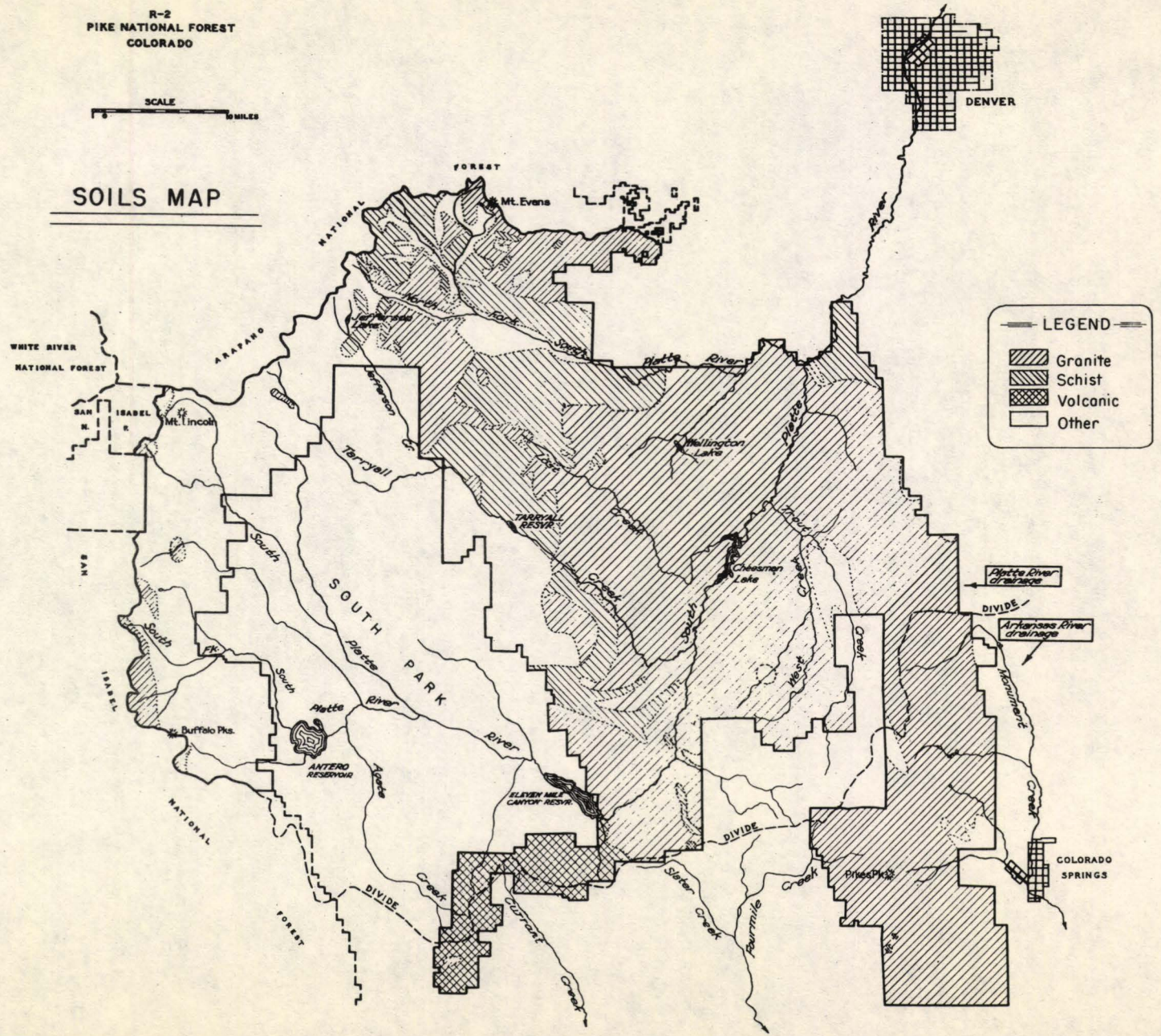
Strong, westerly winds are common yearlong, especially in the Platte River drainage. Upslope wind conditions bring moist air from the Gulf of Mexico into the Pikes Peak region. Chinook winds are quite common and cause heavy loss of snow due to evaporation.

The growing season below 8,500 feet extends from June through September. Above 10,000 feet, killing frosts can be expected during any month of the year and the growing season is much shorter than in the lower elevations.

R-2
PIKE NATIONAL FOREST
COLORADO

SCALE
0 10 MILES

SOILS MAP



MAP 4

F.S. & R.F.R. June 1949

TIMBER MANAGEMENT PLAN

PIKE WORKING CIRCLE

PIKE NATIONAL FOREST

Colorado

Region 2

F.Y. 1963 - 1973

Submitted December 15, 1961 By /S/ Herman E. Ball and Leslie E. Hendry

Reviewed and Recommended for Approval:

Forest Supervisor	/S/ Jess W. Smith	Feb. 7, 1962
Division of Timber Management	/S/ C. C. Averill	March 8, 1962
Engineering	/S/ Marion Lamb	March 8, 1962
Acting Regional Forester	/S/ H. C. Eriksson	March 9, 1962

Approved May 18 1962

/S/ W. S. Swingler
Acting Chief

(D.J.M.)

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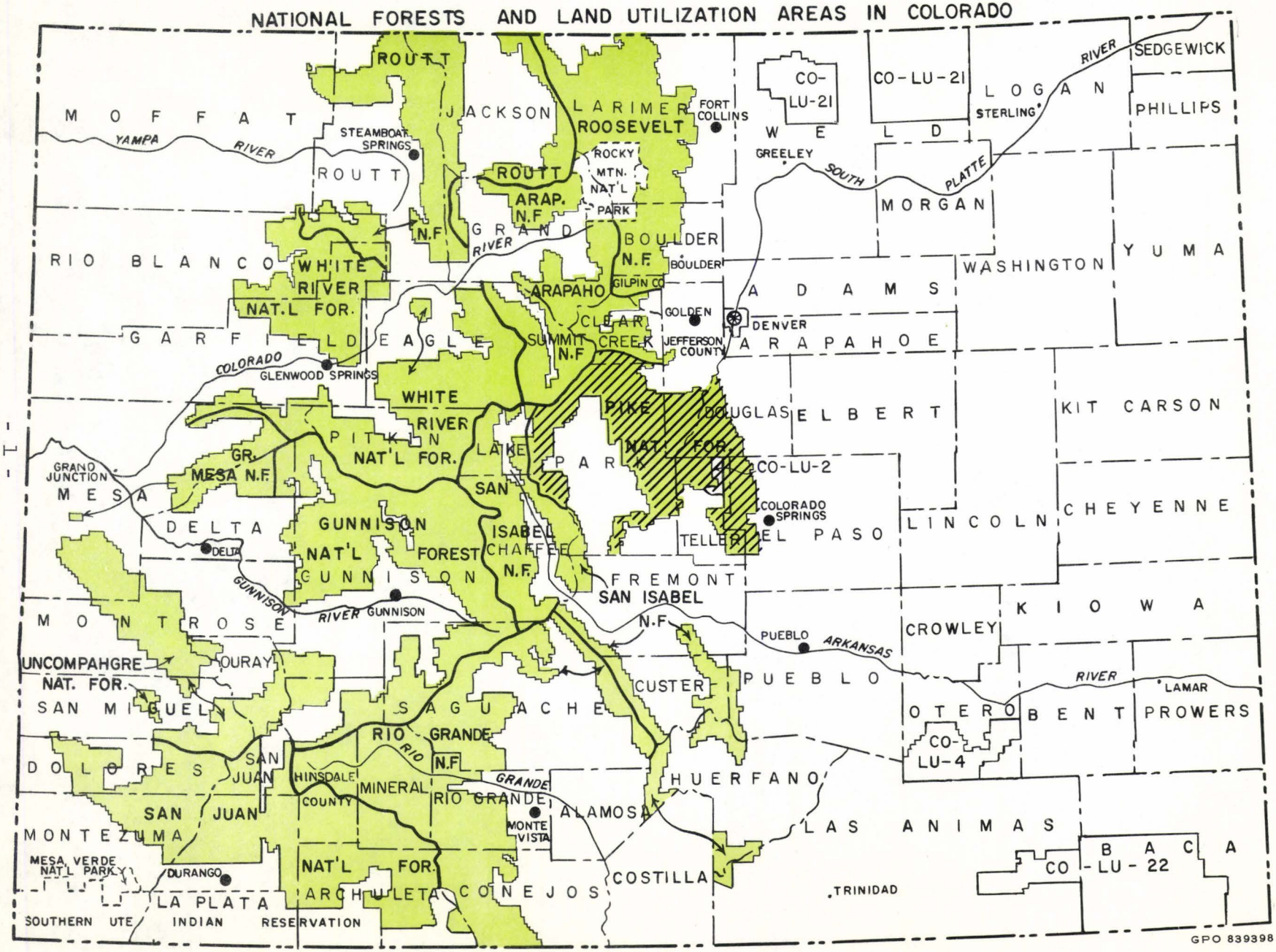
NATIONAL FORESTS AND LAND UTILIZATION AREAS IN COLORADO



PIKE
NATIONAL FOREST and WORKING CIRCLE

GPO 839398

SUMMARY OF PLAN

Table 1

Annual Allowable Cut for Regulated Areas

Types	Area Acres	Volumes Scribner M B.F. 1/	Volumes Cubic M C.F. 2/
Douglas-fir--Ponderosa Pine Working Group Sawtimber	500	1,000	380
Spruce-Fir Sawtimber	1,260	8,000	3,040
Lodgepole Pine Sawtimber	230	1,000	400
Lodgepole Pine Poletimber	610	--	580
Total	2,650	10,000	4,400

1/ In Trees 10" D.B.H. and over.
2/ In Trees 5" D.B.H. and over.

Volume By Species From the Regulated Area

Species	Sawtimber Types* DF-PP Working Group M B.F.	Spruce-Fir M B.F.	Lodgepole Pine M B.F.	Total M B.F.	Poletimber Type Lodgepole Pine M C.F.
Douglas-fir	560	30	50	640	10
Ponderosa Pine	390	--	--	390	--
Lodgepole Pine	--	350	940	1,290	520
Subalpine Fir	--	220	--	220	--
Engelmann Spruce	50	7,400	10	7,460	50
Total	1,000	8,000	1,000	10,000	580

*Volumes are in Scribner log rule for trees 10.0" D.B.H. and over.

Table 2

Total Volume in Unregulated Types

Types	Area - Acres	Volume
White Pine Group	30,355	115,997 M B.F.
Aspen	61,663	20,788 M C.F.
Residual Volume in Lodgepole Pine Sawtimber Cutover Areas Trees 5.0"-9.9" D.B.H.	350 per yr	428 M C.F. Per Year

Table 3

Area By Ownership, Land Classification and Stand Size Class

Land Classification	National Forest	Other Federal	State	County and Municipal	Private	Total
Commercial Forest Land - Acres Unreserved						
Large Sawtimber	100	--	--	--	--	100
Small Sawtimber	606,993	--	6,331	10,151	56,206	679,681
Poletimber	216,350	--	1,105	1,370	22,615	241,440
Seedling-Sapling	18,167	--	10	150	2,216	20,543
Nonstocked	9,540	--	5	230	711	10,486
Subtotal	851,150	--	7,451	11,901	81,748	952,250
Reserved	6,890	2,000	--	--	--	8,890
Noncommercial	76,318	--	902	1,664	11,324	90,208
Non-Forest	159,437	--	2,878	3,272	48,697	214,284
Total	1,093,795	2,000	11,231	16,837	141,769	1,265,632

Table 4

Area of Commercial National Forest Land By Major Types, Stand Size Class and Stocking Class

Thousands of Acres

Type	Small Sawtimber			Poletimber				Seedling-Sapling						
	Med.	Poor	Total	Well	Med.	Poor	Total	Well	Med.	Poor	Total	Nonstocked	Total	Percent
Douglas-fir	72	94	166	27	17	3	47						213	25
Ponderosa Pine	38	195	234	1	11	8	20		2	2	4		258	30
Lodgepole Pine	9	24	32	24	22	2	48	2	1		3		83	10
White Pine Group	5	25	30	1	9	7	17			1	1	1	49	6
Spruce-Fir	66	78	144	4	13	6	23			1	1	9	177	21
Softwood Total			606				155				9	10	780	-
Hardwoods			1				61				9		71	8
Grand Total			607				216				18	10	851	100
Percent			72				25				2	1	100	

Table 5

Total Net Volume For Commercial Forest Lands By Ownership

Ownership	Total Volume			
	Board Feet Trees 9.0" D.B.H.		Cubic Feet	
	Int. $\frac{1}{4}$" MM B.F.	Scrib.Dec.C MM B.F.	Trees 5.0"-10.9"D.B.H.	Trees 11.0"D.B.H. and Larger
Softwood Types				
National Forest	3,003	2,349	404	472
State, County and Municipal	62	48	7	11
Private	230	176	32	37
Total	3,295	2,573	443	520
Hardwood Types				
National Forest	38	29	33	2
State, County and Municipal	0	0	0	0
Private	4	3	3	0
Total	42	32	36	2
Grand Totals				
National Forest	3,041	2,378	437	474
State, County and Municipal	62	48	7	11
Private	234	179	35	37
Total	3,337	2,605	479	522

Table 6

Summary of Total Area, Net Volume Per Acre and Total Volume By Species
For Sawtimber Types - National Forest Unreserved Lands
Scribner Dec. C Log Rule - Trees 9.0" D.B.H. and Larger

Type	Area Acres	Volume Per Acre Bd.Ft.	Total Volume By Species (M Bd. Ft.) Douglas-fir	Ponderosa Pine	Lodgepole Pine	Limber Pine	Subalpine Fir	Engelmann Spruce	Blue Spruce	Aspen	Total	Percent
Douglas-fir	165,981	2,559.35	300,336	47,111	1,020	32,327	1,147	32,582	1,869	8,411	424,803	19.88
Ponderosa Pine	233,009	1,782.59	129,011	253,826	2,700	21,474	-	1,080	7,269	-	415,360	19.44
Lodgepole Pine	32,343	5,665.15	9,528	-	171,208	861	-	1,631	-	-	183,228	8.58
Limber Pine	30,355	3,821.36	3,863	1,288	6,125	68,577	-	36,144	-	-	115,997	5.43
Spruce-Fir	144,395	6,899.37	3,586	100	42,041	44,034	26,101	880,372	-	-	996,234	46.63
Hardwoods	1,010	792.76	311	-	74	-	-	258	-	151	794	0.04
Total	607,093	-	446,635	302,325	223,168	167,273	27,248	952,067	9,138	8,562	2,136,416	100.00
Percent of Total			20.90	14.15	10.45	7.83	1.28	44.56	.43	.40		100.00

Table 6a

Summary of Total Area, Net Volume Per Acre and Total Volume By Species
For Sawtimber Types - State, County, Municipal and Private Lands Combined
Scribner Dec. C Log Rule - Trees 9.0" D.B.H. and Larger

Type	Area Acres	Volume Per Acre Bd. Ft.	Total Volume By Species (M Bd. Ft.) Douglas-fir	Ponderosa Pine	Lodgepole Pine	Limber Pine	Subalpine Fir	Engelmann Spruce	Blue Spruce	Aspen	Total	Percent
Douglas-fir	19,606	2,559.35	35,477	5,565	120	3,819	135	3,849	220	994	50,179	23.84
Ponderosa Pine	38,609	1,782.59	21,377	42,058	448	3,558	-	179	1,204	-	68,824	32.70
Lodgepole Pine	2,073	5,665.15	611	-	10,974	54	-	105	-	-	11,744	5.58
Limber Pine	1,865	3,821.36	237	79	376	4,214	-	2,221			7,127	3.39
Spruce-Fir	10,515	6,899.37	261	7	3,061	3,207	1,901	64,110	-	-	72,547	34.47
Hardwoods	20	792.76	6	-	2	-	-	5	-	3	16	.01
Total	72,688		57,969	47,709	14,981	14,852	2,036	70,469	1,424	997	210,437	100.00
Percent of Total			27.55	22.67	7.12	7.05	.96	33.50	.68	.47		100.00

Table 7

Periodic Annual Net Growth Based on Past 10 Years
Board Feet for Trees 11.0" and Larger, Cubic Feet for
Trees 5.0" and Larger

Type	Feet Per Acre			Total For Type		
	Int. ¼" B.F.	Scribner Dec. C B.F.	Cubic C.F.	Int. ¼" M B.F.	Scribner Dec. C M B.F.	Cubic M C.F.
Sawtimber						
Douglas-fir	+ 8.56	+ 6.92	+2.44	+1,420.80	+1,148.59	+404.99
Ponderosa Pine	+ 8.97	+ 7.16	+2.33	+2,090.09	+1,668.34	+542.91
Lodgepole Pine	- 2.31	- 2.00	-0.10	- 74.71	- 64.69	- 3.23
White Pine Group	+ 8.45	+ 7.13	+2.24	+ 256.50	+ 216.43	+ 68.00
Spruce-Fir	+16.09	+13.71	+4.18	+2,323.32	+1,979.66	+603.57
Poletimber						
Douglas-fir			+1.43			+ 66.58
Ponderosa Pine			+2.03			+ 41.66
Lodgepole Pine			+4.81			+231.32
White Pine Group			+1.37			+ 24.01
Spruce-Fir			+2.07			+ 47.61

Table 8

Recommended Rotation

Type	Years
Douglas-fir - Ponderosa Pine	160
Lodgepole Pine	120
Spruce-Fir	140

Revision Date: June 30, 1972

TIMBER MANAGEMENT PLAN

PIKE WORKING CIRCLE

Pike National Forest

INTRODUCTION

The purpose of this plan is to direct the first 10-year period action program for the Pike Working Circle. It prescribes the action necessary within this period to meet the long term objectives established in the General Timber Management Statement for the Pike National Forest, approved October 11, 1961.

This plan will be revised by June 30, 1972. Earlier revisions will be made when necessary to meet changing conditions.

Detailed Forest Survey data from which this plan was formulated are found on the IBM sheets labeled "1958 Forest Survey, Colorado, IBM Sheets, Pike National Forest, Sample Unit 22," and filed in the office of the Forest Supervisor at Colorado Springs, Colorado.

Compartment records containing maps, volumes, type areas, and compartment descriptions will be filed in the timber atlas for the working circle. These records will be kept current annually for action taken within each compartment, such as area and volume cut, stand improvement work done, area burned and changes in land status. Compartment records will be maintained in the office of the district ranger.

SUMMARY OF RESULTS UNDER PREVIOUS PLANS

As was discussed in the General Timber Management Statement, the forest previously operated under six working circle plans. These six plans are herein consolidated into a single working circle plan for the Pike National Forest.

Accomplishments under the previous plans for the period 1951 through 1960 are as follows.

Timber Cut

The allowable cut for the period was 48.5 MM B.F., whereas the actual cut was 30.0 MM B.F. The reason for cutting only 65 percent of the allowable over this period was due primarily to the lack of an aggressive sales policy and of adequate timber access roads to reach isolated patches of timber.

Table 3 in the General Timber Management Statement summarizes previous plans, and Figure 3 in the Statement compares the allowable and actual cut for the past ten years.

Regeneration

Approximately 900 acres were planted to timber species during this period. Knutson-Vandenburg Act funds were used to plant 170 acres,and regular funds were used to plant the remaining 730 acres. Satisfactory survival has been recorded on 728 of the 900 acres to date. Most of the area was planted to ponderosa pine on the South Platte Block. On other blocks, small acreages were planted to Douglas-fir and Engelmann spruce as well as to ponderosa pine.

Thinnings

Knutson-Vandenburg Act funds were used to thin on 888 acres. Most of this thinning was done in the Engelmann spruce and lodgepole pine types.

Protection Accomplishments

Fire Control

During the 10-year period, 597 fires within the protection boundary burned a total of 1,085 acres of national forest lands. This represents an annual average of 108 acres, which is less than half the 240-acre annual allowable burn for the period. Only one fire reached class "E" size and that was a 400-acre burn on the South Platte District in 1948. All other fires were class "C" or smaller, with 73 percent falling in the class "A" size.

Insect Control

An insect control project was initiated on the Bailey District in 1958 for the Black Hills bark beetle (Dendroctonus ponderosae). From 1958 through 1960 a total of 2,783 ponderosa pine trees were treated with ethylene dibromide. No other insect control projects were conducted during the period.

Area Put in Good Growing Condition

Approximately 18,000 acres have been put into good growing condition in the past ten years. This was accomplished through regeneration cutting on timber sales, commercial thinning of pole-size stands, and timber stand improvement work.

MANAGEMENT OBJECTIVES

This plan establishes a 10-year action program toward accomplishing the long-range objectives contained in the General Timber Management Statement.

The objectives for the first 10 years will be to:

1. Attain the allowable cut for the working circle by F.Y. 1972. This will mean increasing the production of established operators or establishing new operators to meet a 113 percent increase in the allowable cut.

2. Encourage establishment of post and pole operations to utilize approximately 580 M C.F. annually of material available in lodgepole pine pole-size stands.

3. Develop and apply a reforestation program to accomplish one-third of the total reforestation job needed to put all commercial forest land into production by the year 2,000. The 10-year program includes:

   a. An intensive field examination of the following areas of commercial forest land.

      9,000 acres classed by the Forest Survey as nonstocked--By January 1, 1963.

      10,000 acres of aspen type to determine desirability of re-establishing conifers. --By January 1, 1963.

      15,000 acres of Douglas-fir--ponderosa pine type classed as poorly stocked -- By January 1, 1965.

   b. Pending completion of these examinations, plan on accomplishing the following reforestation during this 10-year period.

      3,000 acres of nonstocked forest land.
      4,000 acres of aspen type.
      10,500 acres of poorly-stocked Douglas-fir--ponderosa pine type.

   c. In addition to the above, do fill-in planting as necessary to insure adequate restocking on 19,600 acres of the area to be cut over during current 10-year period.

4. Develop and apply a timber stand improvement program to increase the quantity and quality of timber production. This will include the following:

   a. On-the-ground examination of 30,000 acres in need of noncommercial timber stand improvement work -- By January 1, 1965. By the end of the 10-year period, complete the examination of all areas in need of such work.

   b. Accomplish the following timber stand improvement work, using regular funds.

      30,000 acres of thinning and weeding, particularly in the Douglas-fir--ponderosa pine and the lodgepole pine types.

5. Provide protection for commercial forest lands as follows:

   a. Reduce dwarfmistletoe infection in lodgepole and ponderosa pine by destroying infected residual stands in accordance with the Region 2 Timber Management Guides.

   b. Control epidemic infestations of the Black Hills bark beetle (Dendroctonus ponderosae) and of the spruce budworm (Choristonura fumiferana Clem.) by August, 1963. Through annual maintenance work, prevent further epidemics of the Black Hills bark beetle.

   c. Keep commercial forest land fire damage within the annual PAR area of 250 acres through application of the fire plan for the forest.

In addition to attaining the above-listed management objectives, the following action will be taken.

1. By July 1, 1964 prepare, as a supplement to the working circle plan, a detailed plan for the management of Christmas trees in Compartments 208 through 213 and 225 through 231.

2. By July 1, 1965 determine areas in erosion hazard classes requiring special treatment in timber harvesting.

3. By June 30, 1973 collect and compile growth and yield data for commercial timber types. Also, firm up rotation periods as applicable.

REGULATION

Regulation will be by area, with allowable cut expressed in both area and volume. Control will be by 10-year periods. Undercuts that have built up during the period may be cut during the remainder of the same period, provided that the total cumulative cut does not exceed the allowable periodic cut by more than 10 percent. The control of the allowable cut will be by type area and not by species cut within the type. Sales programs will be by species and products in volume sufficient to meet the area control objectives.

The financed cut for any one year is based upon volume and includes the cut from both the regulated and unregulated areas. The financed cut quota should be sufficient to meet both volume and area objectives for the forest as a whole.

If the present relationship between area and volume is found to be out of proportion for the forest as a whole, the volume allowable cut will be adjusted to be consistent with area regulation. No adjustment will be made prior to the end of the first five-year period. If inoperability factors as established for the regulated types are found to be incorrect, the area and volume will be adjusted accordingly. No adjustment for inoperability will be made prior to the end of the 10-year period.

The major sawtimber types in the working circle are Douglas-fir, ponderosa pine, lodgepole pine and spruce-fir. The Douglas-fir type and the ponderosa pine type are consolidated and will be managed as a working group under this plan.

Lodgepole pine poletimber will be regulated to maintain proper stocking through commercial thinnings in thrifty stands, and to clear cut and regenerate over-aged, stagnant stands.

Christmas tree harvest will be regulated beginning July 1, 1964 upon completion and approval of a Christmas tree management plan as a supplement to this plan.

The white pine group and the aspen type will be unregulated. It is unlikely that there will be any demand for cutting in these types during the next ten years. Also included in the unregulated cut will be material between 5.0" and 9.9" D.B.H. left in the residual stand after clear-cutting lodgepole pine sawtimber stands.

Rotation

Previous plans established rotations of 180 years in the Douglas-fir and ponderosa pine types, and 200 years in the spruce-fir type. These rotations were based on general observation and experience rather than on detailed studies of growth and yield. Such studies were and still are lacking on the forest. For the purposes of this plan, rotations have been established based on site tree data from the Forest Survey. Although this

information is insufficient to establish a firm rotation, the period indicated is satisfactory for use on the Kemp formula as a check on the allowable cut calculated by the tabulation method. Rotation is actually of little importance during the adjustment period.

The rotations indicated by available data are shown on Table 8.

Growth and yield information will be compiled during the first 10-year period so that firm rotation periods can be established for the working circle prior to the first revision of this plan.

Methods of Cutting

Region 2's Management Guides for Lodgepole Pine and Engelmann Spruce, FSH2-2442.8 will be applied in timber marking. These guides provide for clear cutting by patches or strips, with even-age management as the objective. Cutting in the Douglas-fir--ponderosa pine working group will also have even-age management as its objective and will be in accordance with the Management Guide for Ponderosa Pine and Associated Species.

The Pike National Forest is very heavily used for recreation. Maintaining the forest's aesthetic values is, therefore, of high priority. This need can normally be met on cutover areas in the special treatment zones by manipulating the size and shape of the group or patch cutting in accordance with local conditions and by doing a good slash disposal job immediately after logging. This may be by piling and burning, chipping or other approved method.

Within these guidelines, the Regional Forester and Forest Supervisor are authorized to make sales in the roadside and other special treatment zones of system roads, including Highways U.S. 24 and 285, for the purpose of protecting, improving, and maintaining stands of timber.

Timber cutting within designated recreation areas will be in accordance with the objective of the recreation plan for the specific area.

Water is one of the key resources of the Pike National Forest. The Cities of Denver and Colorado Springs and other population centers along the eastern slope are largely dependent on the forest for their water supplies. All phases of timber management will be practiced in a manner that will maintain or enhance regulated water yields and protect the water resource.

Growing Stock

The forest inventory divides the major timber types into stand size classes and stocking classes. The definitions for these classes are Forest Survey standards as follows:

Sawtimber	- Trees	11.0 inches D.B.H. and larger.
Poletimber	- Trees	5.0 inches to 10.9 inches D.B.H.
Seedling-Sapling	- Trees	1.0 inches to 4.9 inches D.B.H.

Stocking classes or crown density classes refer to the extent to which growing space is utilized by present growing stock trees of commercial species. The classification is based on the percent of crown closure. The crown density classes for sawtimber stands, as used in this plan, are for the percent of closure of sawtimber crown. The stocking classes for poletimber and seedling-sapling stands are based on crown closure for all trees regardless of their size.

Classification	Percent of Crown Closure
Well stocked	70+
Medium stocked	40 to 69
Poorly stocked	10 to 39
Nonstocked	0 to 9

Condition classes were not used in the survey. The breakdown into stand size classes is purely on size and does not reflect the growing potential of the trees into the next larger size class. For example, some areas of stagnated lodgepole pine were typed as poletimber. Considering the age and overstocking, some of these stands are not likely to grow into sawtimber size stands. Such lands can be put into production only by removing the present stand and regenerating the area.

Because of the above described situation, it was necessary to adjust Forest Survey's area of lodgepole pine poletimber type so that it would include only those stands having a chance of growing into sawtimber. This adjustment was based on an estimate of the area of lodgepole pine poletimber type that should be thinned and clear cut. Age, stocking, and the prevalence of dwarfmistletoe were the influential factors. Stagnated stands of lodgepole pine over 70 years of age cannot be expected to grow into sawtimber.

Site tree ages are used only as a guide in determining the percent of poletimber stands that are stagnant and overaged. Site tree ages indicate that 74 percent of the trees in this type are over 70 years of age. However, since poletimber includes material up to 10.9 inches D.B.H., this figure has little value in determining acreage that is stagnant and in need of clear cutting, particularly in the medium stocking class. Until better information can be gathered, the percentages shown in Table 9 will be used for regulating lodgepole pine poletimber and adjusting growing stock.

Table 9

Lodgepole Pine Poletimber Type Areas to be Thinned or Clear Cut by Crown Density Classes

Crown Density Class	Area to be Thinned 1/		Area to be Clear Cut 2/		Total of Thinned and Clear-cut Areas	Area Not to be Cut 3/	Grand Total
	Acres	Percent	Acres	Percent	Acres	Acres	Acres
Well	7,216	30	16,838	70	24,054	--	24,054
Medium	11,087	50	11,086	50	22,173	--	22,173
Poor	--	--	--	--	--	1,865	1,865
Total	18,303	--	27,924	--	46,227	1,865	48,092
Percentage Total	38	--	58	--	--	4	100

1/ To be classified as growing stock - poletimber.
2/ To be classified as nonstocked.
3/ To be classified as seedling-sapling.

In the Douglas-fir--ponderosa pine working group, 87 percent, or 398,990 acres are in the sawtimber size class. Of this area, 28 percent is classed as medium stocked and 72 percent is classed as poorly stocked. Much of the poorly stocked area is inoperable at this time because of low volume per acre and poor quality timber. This fact is considered in establishing the operability factor for the working group.

No adjustment is necessary to reflect growing stock in the spruce-fir type.

Table 10 summarizes the area by stand-size classes in the regulated type, adjusted for growing stock. The table indicates a shortage of area in the seedling-sapling and poletimber classes in all three types. There is an over-abundance of area in the sawtimber class, both in the spruce-fir and Douglas-fir--ponderosa pine types.

By applying a uniform rate of cutting in the lodgepole pine type and the spruce-fir type a desirable distribution of age classes can be obtained in the first rotation. This will not be the case for the Douglas-fir--ponderosa pine type because of the large acreage in poorly stocked sawtimber.

Growth and Mortality

Growth and mortality are based on Forest Survey data. The calculation is explained under "Supporting Data". Table 11 shows the growth and mortality for the regulated sawtimber types.

Although empirical yield tables are not available at this time, it is felt that under management an average annual net growth of 150 board feet per acre is within reason.

Mortality in all types is due largely to disease. Losses from insect damage have been comparatively light, with little or no losses from Engelmann spruce bark beetle. Most of the lodgepole pine and spruce-fir sawtimber is overaged, and mortality can be expected to increase in these types until the timber is harvested.

Prior to the end of this 10-year planning period, the growth and mortality will be re-examined. If any material changes are found, the adjustment period will be revised accordingly.

Table 10

Showing Area by Stand Size Classes and Adjusted Area for Growing Stock for Major Types

Stand Size Class	Lodgepole Pine Type				Spruce-Fir Type		Douglas-fir--Ponerosa Pine Working Group	
	Forest Survey Area		Area Adjusted to Reflect Growing Stock		Forest Survey Area		Forest Survey Area	
	Acres	Percent	M Acres	Percent	Acres	Percent	Acres	Percent
Sawtimber	32,343	39	32	38	144,395	81	398,990	87
Poletimber	48,092	58	18	22	22,998	13	67,079	12
Seedling-Sapling	2,556	3	5	6	789	1	4,405	1
Nonstocked	35	-	28	34	8,996	5	-	-
Total	83,026	100	83	100	177,178	100	470,474	100

Table 11

Summary of Annual Net Growth and Mortality
Per Acre by Major Sawtimber Types

Type	Annual Net Growth Per Acre: Int. ¼" B.F.	Annual Net Growth Per Acre: Scribner Dec. C B.F.	Annual Net Growth Per Acre: Cubic C.F.	Annual Mortality Per Acre: Int. ¼" B.F.	Annual Mortality Per Acre: Scribner Dec. C B.F.	Annual Mortality Per Acre: Cubic C.F.	Area Acres	Total Annual Net Growth: Int. ¼" M B.F.	Total Annual Net Growth: Scribner Dec. C M B.F.	Total Annual Net Growth: Cubic M C.F.	Total Annual Mortality: Int. ¼" M B.F.	Total Annual Mortality: Scribner Dec. C M B.F.	Total Annual Mortality: Cubic M C.F.
Douglas-fir	8.56	6.92	2.44	44.38	37.05	9.11	165,981	1,421	1,149	405	7,366	6,150	1,512
Ponderosa Pine	8.97	7.16	2.33	26.82	22.76	5.47	233,009	2,090	1,668	543	6,249	5,303	1,275
Douglas-fir--Ponderosa Pine Work. Group	8.80	7.06	2.38	34.12	28.70	6.98	398,990	3,511	2,817	948	13,615	11,453	2,787
Lodgepole Pine	-2.31	-2.00	-0.10	49.39	42.76	10.73	32,343	-75	-65	-3	1,597	1,383	347
Spruce-Fir	16.09	13.71	4.18	30.32	25.14	6.20	144,395	2,323	1,980	604	4,378	3,630	895
Totals & Wt.Aver.	+10.00	+8.22	+2.69	34.03	28.60	7.00	575,728	5,759	4,732	1,549	19,590	16,466	4,029

Calculation of Allowable Cut

Adjustment Period

A 40-year adjustment period is set up in this plan for the harvest of all operable, overaged sawtimber in the regulated types and all overaged pole-timber in the lodgepole pine type. The adjustment period is used to put all operable, unreserved commercial forest land in good growing condition.

Douglas-fir--Ponderosa Pine Sawtimber Working Group

There are 398,990 acres in this group typed as sawtimber. Based on site tree data from the Forest Survey, 83 percent of the sawtimber is under rotation age and will not be included in the allowable cut calculation.

Of the 67,830-acre balance, 70 percent is considered inoperable because of the following conditions:

1. Heavily used recreation areas.
2. Complex land ownership problems.
3. Steep, rocky slopes.
4. Isolated, small patches which cannot be reached economically by roads.
5. Larger areas of poor quality and low-volume timber which make operation uneconomic when access costs are considered.
6. Areas in Erosion Class V on which there will be no cutting, at least under logging method currently available to operators.

The net operable area in the working group is 20,350 acres.

The current periodic annual net growth is 7.06 board feet, Scribner, per acre in trees 11 inches D.B.H. and larger. Current annual mortality is 28.70 board feet per acre in the same material. Considering the general age of the group, the annual net growth can be expected to remain about the same under existing conditions. Since most of the stands are now understocked and unmanaged, it is reasonable to expect a much greater net growth per acre when these stands are put under good management.

The allowable cut in area and in Scribner board foot volume is shown in Table 12 for each 10 years of the adjustment period. An equal volume of timber to be cut was set up for each 10-year period, then the area was adjusted to reflect this volume.

Based on the tabulation method the annual allowable cut in this group for the first 10-year period is:

Area - 500 acres

Volume - 1,000 M B.F. Scribner Dec. C in trees 10 inches D.B.H. and over.

This compares with other methods as follows:

Straight area calculation based on rotation age:

470,474 acres reduced 40 percent for inoperability and Erosion Hazard Class V = 282,284 acres net.

$$\frac{282,284 \text{ acres}}{160 \text{ years}} = 1,764 \text{ acres per year.}$$

The Kemp formula indicates 2,945 acres per year.

The volume to be cut from the 500 acres in this group is obtained by applying the average volume per acre as shown in the stock and stand table for the group, less 50 percent of the volume in the 9.0 inch to 10.9 inch D.B.H. class. The reduction in volume is made to more nearly indicate the true sawtimber volume since merchantability standards for the region set the minimum D.B.H. for sawtimber at 10 inches. Growth is calculated at the midpoint of the 10-year period and added to the average volume per acre.

The following shows the estimated volume to be cut by species. The volume is based on Scribner Dec. C log rule and is for trees 10.0 inches D.B.H. and over.

Species	Percent of Volume	Volume M B.F.
Douglas-fir	56	560
Ponderosa Pine	39	390
Engelmann Spruce	5	50
Total	100	1,000

Spruce-Fir Sawtimber Type

There are 144,395 acres of spruce-fir sawtimber within the working circle. Approximately 68 percent is over rotation age (140 years) and is planned for harvest during the adjustment period.

An inoperability factor of 50 percent is applied which excludes recreation areas, complex ownership patterns, steep, rocky slopes, and small isolated patches of timber that cannot be reached from an economic standpoint. None of this type occurs in an erosion hazard class that would restrict cutting.

The current periodic annual net growth in trees 11.0 inches and over is 13.71 board feet per acre in Scribner Dec. C log rule. Current annual mortality is 25.14 board feet per acre in Scribner for the same material. Considering the general age of the type, annual mortality can be expected to increase.

The allowable cut in area and Scribner Decimal C board foot volume is shown in Table 12 for each 10 years of the adjustment period. An equal volume of timber to be cut was set up for each 10-year period, then area was adjusted to reflect this volume.

Based on the tabulation method, the annual allowable cut in this type for the first 10 years is:

Area - 1,260 acres

Volume - 8,000 M B.F. Scribner Dec. C in trees 10 inches D.B.H. and over.

This compares with other methods of area calculation as follows:

Straight area based on rotation age of 140 years, 177,178 acres reduced to 50 percent for operable leaves 88,590 acres net.

$\frac{88,590}{140}$ = 633 acres per year.

The Kemp formula indicates 1,015 acres per year.

The volume to be cut from the 1,260 acres in this type was obtained by applying the average volume per acre as shown in the stock and stand table for the type, less 50 percent of the volume in the 9.0 inch to 10.9 inch D.B.H. class. The reduction in volume is made to more nearly indicate the true sawtimber volume, since the minimum D.B.H. for sawtimber trees is 10 inches. Growth is calculated at the midpoint of the 10-year period and added to the average volume per acre.

The following shows the estimated volume to be cut by species. The volume is based on Scribner Dec. C log rule and is for trees 10 inches D.B.H. and larger.

Species	Percent of Volume	Volume M B.F.
Douglas-fir	1	30
Lodgepole Pine	4	350
Subalpine Fir	3	220
Englemann Spruce	92	7,400
Total	100	8,000

Lodgepole Pine Sawtimber Type

There are 32,343 acres of lodgepole pine sawtimber within the working circle. Approximately 88 percent is over rotation age (120 years) and is planned for harvest during the adjustment period.

An inoperability factor of 65 percent is applied which excludes recreation areas, complex ownership patterns, steep, rocky slopes, and small isolated patches of timber that, from an economic standpoint, cannot be reached. None of the area in this type falls within an erosion hazard class where cutting if prohibited. Minor areas will, however, fall in a class where cutting is restricted but this should have little or no effect on the allowable cut.

The current periodic annual net loss in trees 11.0 inches D.B.H. and larger is 2.00 board feet per acre in Scribner Dec. C log rule. Current annual mortality is 42.76 board feet per acre in Scribner for the same material. Considering the general age of the type, annual mortality can be expected to increase.

The allowable cut in area and Scribner Dec. C board foot volume is shown in Table 12 for each 10 years of the adjustment period. An equal volume of timber to be cut was set up for each 10-year period, then the area was adjusted to reflect this volume.

Based on the tabulation method the annual allowable cut in this type for the first 10 years is:

Area - 230 acres

Volume - 1,000 M B.F. Scribner Dec. C in trees 10 inches D.B.H. and over.

This compares with other methods of area calculation as follows:

Straight area based on rotation age of 120 years, 83,026 acres reduced to 35 percent for operable leaves 29,059 acres net.

$\frac{29,059}{120}$ = 242 acres per year.

Kemp formula - 260 acres per year (area adjusted to reflect growing stock).

The volume to be cut from the 230 acres in this type is obtained by applying the average volume per acre as shown in the stock and stand table for the type, less 50 percent of the volume in the 9.0 inch to 10.9 inch D.B.H. class. The reduction in volume is made to more nearly indicate the true sawtimber volume per acre, since the minimum D.B.H. for sawtimber trees is 10.0 inches. Loss due to mortality is calculated at the midpoint of the 10-year period and deducted from the average volume per acre.

The following shows the estimated volume to be cut by species. The volume is based on Scribner Dec. C log rule and is for trees 10.0 inches D.B.H. and larger.

Species	Percent of Volume	Volume M B.F.
Douglas-fir	5	50
Lodgepole Pine	94	940
Englemann Spruce	1	10
Total	100	1,000

Lodgepole Pine Poletimber Type

There are 48,092 acres in the lodgepole pine type classed as poletimber. As was discussed under Growing Stock, much of this acreage will not grow into sawtimber size and will have to be clear cut and regenerated before it can be considered productive. Younger stands on better sites that are likely to grow into sawtimber will be commercially thinned wherever possible. Material from clear-cut and from thinned poletimber stands will be carried as part of the regulated cut.

Table 9 shows the approximate acreages to be thinned and clear cut. An inoperability factor of 50 percent is applied to these acreages which excludes complex land ownership patterns, steep,rocky slopes, and areas that cannot be cut because of poor quality.

The current periodic annual net growth in trees 5.0 inches D.B.H. and larger is 4.81 cubic feet per acre. Current annual mortality is 0.04 cubic feet per acre. Growth and mortality can be expected to remain about the same under existing conditions. Under good management a much greater annual net growth can be realized from this type.

The conversion from wild to managed stands is scheduled over the 40-year adjustment period because of the large area involved and the present lack of demand for post and pole material. Should markets develop to increase the demand, it would be desirable to increase the allowable cut and put these stands under management at a faster rate. Adjustments should be made to meet changing conditions in this type.

The allowable cut in area and cubic foot volume is shown in Table 12 for each 10 years of the adjustment period. An equal volume of material to be cut was set up for each 10-year period, then area was adjusted to reflect this volume.

Based on the tabulation method, the annual allowable cut in this type for the first 10 years is:

Area - 610 acres

Volume - 580 M cubic feet in trees 5.0 inches D.B.H. and over.

The volume to be taken from the 610 acres was obtained by adjusting the average volume from the stock and stand table by the percent of area to be thinned and the percent to be clear cut. The same formula was used to determine net growth. Growth was then calculated at the midpoint of each 10-year period. Calculations are based on taking 50 percent of the volume from thinned areas and 100 percent of the volume from clear-cut areas.

The following shows the estimated volume to be cut by species. The volume is based on cubic foot volume in the 5.0 inch D.B.H. and larger class.

Species	Percent of Volume	Volume M C.F.
Douglas-fir	1	10
Lodgepole Pine	90	520
Engelmann Spruce	9	50
Total	100	580

Volume from re-thinned areas is not included since there will be no re-thinning during the adjustment period.

Douglas-fir Christmas Tree Areas

There are 13,395 acres of Douglas-fir type in Compartments 208 through 213 and 225 through 231 that will be managed for Christmas trees. These areas produce a large number of high quality Christmas trees that have been in great demand and have commanded premium prices since the 1920's. Additional information such as methods of cutting, number of trees per acre, and rotation will be needed before this section of the plan can be written. As stated under Management Objectives, this information will be gathered and a Christmas tree management plan will be written by July 1, 1964 as a supplement to this plan.

Table 12

Allowable Cut - Area and Volume
By 10-Year Periods for 40-Year Adjustment Period
Based on Current Rate of Growth

10-Yr. Period	Type and Stand Size Class	Area Acres	Vol. Per Acre Scrib. Dec. C: Present B.F.	Net Growth B.F.	Total B.F.	Total Volume MM B.F.	Volume Per Acre: Present C.F.	Net Growth C.F.	Total C.F.	Total Volume MM C.F.
1st	Douglas-fir--Ponderosa Pine:									
	Sawtimber	5,000	2,013.04	+35.30	2,048.34	10				
	Spruce-Fir									
	Sawtimber	12,600	6,269.14	+68.55	6,337.69	80				
	Lodgepole Pine									
	Sawtimber	2,300	4,397.65	-10.00	4,387.65	10				
	Poletimber	6,100					929.17	24.05	953.22	58
2nd	Douglas-fir--Ponderosa Pine:									
	Sawtimber	5,000	2,013.04	+105.90	2,118.94	10				
	Spruce-Fir									
	Sawtimber	12,400	6,269.14	+205.65	6,474.79	80				
	Lodgepole Pine									
	Sawtimber	2,300	4,397.65	-30.00	4,367.65	10				
	Poletimber	5,800					929.17	72.15	1,001.32	58
3rd	Douglas-fir--Ponderosa Pine:									
	Sawtimber	5,000	2,013.04	+176.50	2,189.54	10				
	Spruce-Fir									
	Sawtimber	12,100	6,269.14	+342.75	6,611.89	80				
	Lodgepole Pine									
	Sawtimber	2,300	4,397.65	-50.00	4,347.65	10				
	Poletimber	5,500					929.17	120.25	1,049.42	58

(Table Continued)

Table 12 (Continued)

Allowable Cut - Area and Volume
By 10-Year Periods for 40-Year Adjustment Period
Based on Current Rate of Growth

10-Yr. Period	Type and Stand Size Class	Area Acres	Vol.Per Acre Scrib.Dec. C Present B.F.	Net Growth B.F.	Total B.F.	Total Volume MM B.F.	Volume Per Acre Present C.F.	Net Growth C.F.	Total C.F.	Total Volume MM C.F.
4th	Douglas-fir--Ponderosa Pine									
	Sawtimber	4,500	2,013.04	+247.10	2,260.14	10				
	Spruce-Fir									
	Sawtimber	11,900	6,269.14	+479.85	6,748.99	80				
	Lodgepole Pine									
	Sawtimber	2,300	4,397.65	-70.00	4,327.65	10				
	Poletimber	5,300					929.17	168.35	1,097.52	58
Totals										
	Douglas-fir--Ponderosa Pine									
	Sawtimber	19,500								
	Spruce-Fir									
	Sawtimber	49,000								
	Lodgepole Pine									
	Sawtimber	9,200								
	Poletimber	22,700								

Allowable Cut Beyond the 40-Year Adjustment Period

At the end of the 40-year adjustment period it is estimated that the distribution of stand size classes after reduction for inoperability will be as follows:

Stand Size Class	Douglas-fir--Ponderosa Pine M Acres	Spruce-Fir M Acres	Lodgepole Pine M Acres	Total
Sawtimber	147	34	10	191
Poletimber	63	3	3	69
Seedling-Sapling	70	45	26	141
Nonstocked	3	6	2	11
Total	283	88	41	412

The above estimates used in the Kemp formula indicate the following allowable cuts after the adjustment period.

Douglas-fir--Ponderosa Pine Group

According to the Kemp formula:

$$\frac{7\ (147{,}000) + 5\ (63{,}000) + 3\ (70{,}000) + 3{,}000}{4\ (160)} = 2{,}432 \text{ acres per year.}$$

This would indicate a large increase in the allowable cut in this group. This is realistic, considering the heavy cutting that took place from around 1850 through the early 1900's. These second growth stands will begin reaching rotation age at the end of the adjustment period. It should be possible to obtain an even distribution of age classes by the end of the first rotation following the adjustment period.

Spruce-Fir Type

According to the Kemp formula:

$$\frac{7\ (34{,}000) + 5\ (3{,}000) + 3\ (45{,}000) + 6{,}000}{4\ (140)} = 704 \text{ acres per year.}$$

This would indicate a large decrease in the allowable cut in this type following the adjustment period. An acceptable distribution of age classes would be obtained at the end of the first rotation.

Lodgepole Pine

According to the Kemp formula:

$$\frac{7\ (10{,}000) + 5\ (3{,}000) + 3\ (26{,}000) + 2{,}000}{4\ (120)} = 344 \text{ acres per year.}$$

This indicates that the allowable cut in the type will increase after the adjustment period. An acceptable distribution of age classes would be obtained by the end of the first rotation period.

The following shows a comparison between the allowable cuts for the adjustment period and the allowable cut as indicated by the Kemp formula using the above estimated distributions:

Type	Adjustment Period Acres	After Adjustment Period Acres
Douglas-fir--Ponderosa Pine	500	2,432
Spruce-Fir	1,260	704
Lodgepole Pine	230	344
Total	1,990	3,480

Post and pole material will come from intermediate thinnings in the lodgepole pine type after the adjustment period. With an increase in growth rate under good management, the volume of poletimber available for cutting could be expected to increase.

Volume in Unregulated Cut

White Pine Group

There are 30,355 acres of sawtimber in this type within the working circle. The weighted average volume per acre in Scribner Dec. C is 3,821.36 board feet for a total volume of 115,997 M B.F. in limber pine and bristlecone pine. The stock of sawtimber-size trees in this type is generally of very poor quality. There has been little or no demand for products from this type other than fence posts and fuel wood. Most of the type is located on poor, rocky, inaccessible sites. Very little cutting is anticipated in this type within the foreseeable future. However, any cutting that is done will be charged against the unregulated cut.

Aspen Type

There are 61,663 acres of poletimber and sawtimber in the aspen type. The weighted average volume is 337.13 cubic feet per acre for a total volume of 20,788 M cubic feet in the type. Aspen makes up 86 percent of the volume, with the remaining volume fairly evenly distributed between Douglas-fir, lodgepole

pine, limber pine, and spruce. Most of the aspen type is located on sites previously occupied by coniferous species and, although generally accessible, there is very little demand for the material. Any cutting in this type will be charged against the unregulated cut.

Lodgepole Pine Type

During the adjustment period, 14,000 acres of lodgepole pine sawtimber are planned for cutting. After these areas are cut over there will remain 1,221.95 cubic feet per acre of material in residual trees 5.0 inches to 9.9 inches D.B.H. that will be available for cutting at the option of the operator. A total volume of 17,107 M C.F. of this material will be available for cutting during the adjustment period and is chargeable against the unregulated cut.

Cutting Budget

The cutting budget for the first 10 years is shown in Table 13. Selection of compartments in which cutting will be done was based on the need for harvesting because of age and condition of the stands within these compartments and for an orderly progress of cutting over the working circle.

A cutting budget for lodgepole poletimber will not be set up until markets are developed to use the large volume of material available in this type.

Table 13

Cutting Budget
F.Y. 1963 - 1973

Volume in Scribner for Trees 10" D.B.H. and Over

Compartment No.	Name	F.Y. to Sell	Block	Douglas-fir--Ponderosa Pine Gr. Net Acres	Douglas-fir--Ponderosa Pine Gr. Net Volume M B.F.	Lodgepole Pine Type Net Acres	Lodgepole Pine Type Net Volume M B.F.	Engelmann Spruce Type Net Acres	Engelmann Spruce Type Net Volume M B.F.	Total Net Acres	Total Net Volume M B.F.
Timber Under Contract but Uncut as of June 30, 1962				307	328	1,525	6,705	5,347	33,521	7,179	40,844
145	Chimney	1962	Pikes Peak	47	95			3	19	50	114
216	Shinglemill	1962	So. Platte	160	322					160	322
124	Star) One	1962	Lake George	134	270			34	213	168	483
127	Blue) Sale			191	384					191	384
149	Plum	1963	Pikes Peak	31	62	500	2,199	78	489	609	2,750
84	Indian) One	1963)	Bailey)			224	985	796	4,990	1,020	5,975
85	Bonus) Sale	)	)			365	1,605	1,261	7,905	1,626	9,510
288	Goose Cr.#2) One	1963)	So. Platte)	141	284					141	284
289	Hankins Gulch) Sale	)	)	42	85	22	97	401	2,514	465	2,696
290	Corral Gulch)	)	)	114	229			36	226	150	455
261	So. Platte)	)	)	189	380					189	380
106	Matakut	1963	Lake George	230	463			82	514	312	977
119	Vermillion	1963	Lake George	224	451					224	451
67	Twin Cones	1964	Bailey	10	20			539	3,379	549	3,399
134	Union) One	1964)	Lake Geo.)	87	175			179	1,122	266	1,297
135	Gilead) Sale	)	)	33	66			510	3,197	543	3,263
136	Cross)	)	)	28	56			350	2,194	378	2,250
150	Gore	1966	Pikes Peak	94	189	31	136			125	325
236	Wigwam Creek) One	1966)	So. Platte)	216	435	387	1,702	840	5,266	1,443	7,403
257	Goose Creek#1) Sale	)	)	138	278					138	278
258	Twin Creeks)	)	)	84	169			31	194	115	363

(Table Continued)

Table 13(Continued)

Cutting Budget
F.Y. 1963 - 1973

Volume In Scribner for Trees 10" D.B.H. and Over

Compartment No.	Name	F.Y. to Sell	Block	Douglas-fir--Pond. Pine Gr. Net Acres	Douglas-fir--Pond. Pine Gr. Net Volume	Lodgepole Pine Type Net Acres	Lodgepole Pine Type Net Volume	Engelmann Spruce Type Net Acres	Engelmann Spruce Type Net Volume	Total Net Acres	Total Net Volume
24	Rich) One	1966)	So. Park)			221	972	486	3,047	707	4,019
29	Lynch) Sale	)	)			44	193	391	2,451	435	2,644
30	Meadow)	)	)			132	580	826	5,178	958	5,758
95	Farnum) One	1967)	Lake Geo.)	117	236			88	552	205	788
96	Terhune) Sale	)	)	55	111	13	57	75	470	143	638
151	Stone	1967	Pikes Peak	130	262					130	262
77	Upper Craig	1967	Bailey					1,771	11,103	1,771	11,103
166	Soldier	1968	Pikes Peak	182	366			16	100	198	466
138	Shimmins)	1970)	Lake Geo.)	17	34			248	1,555	265	1,589
139	VVN) One	)	)	18	36			466	2,921	484	2,957
140	Paris) Sale	)	)	12	24			194	1,216	206	1,240
141	Black)	)	)	6	12			112	702	118	714
146	Drury	1970	Pikes Peak	122	246					122	246
Total for 10-Year Period				3,015	6,068	3,200	14,070	14,611	91,596	20,826	111,734

TRANSPORTATION

Table 14 shows the road construction and right-of-way program necessary to harvest the timber listed in the 10-year cutting budget.

The timber stand in some compartments is insufficient in quantity and quality to support the cost of road construction under present economic conditions. In such cases, the budgeting of the timber for sale will be deferred until economic conditions will allow timber-financed construction or until the need for access to the area justifies the use of all-purpose funds.

The roads listed in the table are primarily for timber access. Where heavy all-purpose use following completion of timber hauling is anticipated, major bridges, culverts and other improvements will be constructed initially to meet the eventual needs. Financing of such extra-cost improvements will be from all-purpose funds.

Rights-of-way will be obtained sufficiently in advance of road construction to avoid delays in construction.

Table 14

Timber Access Road Development Program
F.Y. 1963 - 1973

Compartment No.	Compartment Name	Road Name	Road No.	Class	Estimated Miles Constructed By: Forest Service	Estimated Miles Constructed By: Purchaser	Estimated Total Cost To: Forest Service	Estimated Total Cost To: Purchaser	Sale Date	ROW Needed Year	Remarks
149	Plum	Ice Cave	1118	SN 12	3.0	2.2	30,000	19,000	1963	1962	Const. & Reconst.
84	Indian	Lost Creek	1152	SN 12		1.0		12,000	1963	-	Construct
85	Bonus	Lost Creek	1152	SN 12		1.0		10,000	1963	-	Construct
85	Bonus	Lost Park	1041	SN 14		2.0		18,000	1963	-	Construct
288	Goose Creek	Graham	1073	SN 12		3.0		28,000	1963	-	Construct
289	Hankins Gulch	Leissler	36005	SN 12		2.0		18,000	1963	-	Construct
290	Corral Gulch	Madison	35169	SN 12	3.0		27,000		1963	-	Construct
106	Matakut	Madison	35169	SN 12		3.0		30,000	1963	1962	Construct
106	Matakut	Speed	35143	SN 12		4.0			1963	1962	Construct
119	Vermillion	Norton	35170	SN 12		2.0			1963	1962	Construct
119	Vermillion	Burke	36003	SN 12		1.5			1963	1962	Construct
67	Twin Cones	Cameron	35264	SN 12		1.0			1964	-	Construct
134	Union	Walnut	35181	SN 12	2.0		24,000		1964	-	Construct
134	Union	Porter	36004	SN 12		1.0		10,000	1964	-	Construct
135	Gilead	Walnut	35181	SN 12		1.0		9,000	1964	-	Construct
136	Cross	Walnut	35181	SN 12		3.0		27,000	1964	-	Const. & Reconst.
150	Gore	Stone Canyon	35098	SN 12		1.0		8,500	1966	-	Const. & Reconst.
236	Wigwam Creek	Notch	35065	SN 14	3.0	3.0	33,000		1966	1965	Const. & Reconst.
258	Twin Creeks	Humble	35302	SN 12		1.0			1966	-	Reconstruct
24	Rich	Rich	1033	SN 12		1.6		14,000	1966	-	Construct
24	Rich	Buffalo Meadows	1036	SN 14	4.0		40,000		1966	-	Construct
29	Lynch	Krasner	35029	SN 12	2.0		20,000		1966	-	Construct

(Table Continued)

Table 14 (Continued)

Timber Access Road Development Program
F.Y. 1963 - 1973

Compartment No.	Compartment Name	Road Name	Road No.	Class	Estimated Miles Constructed By: Forest Service	Estimated Miles Constructed By: Purchaser	Estimated Total Cost To: Forest Service	Estimated Total Cost To: Purchaser	Sale Date	ROW Needed: Year	Remarks
29	Lynch	Milligan	35257	SN 12		2.0			1966	-	Construct
29	Lynch	Buffalo Meadows	1036	SN 16	2.0		22,000		1966	-	Const. & Reconst.
30	Meadow	Buffalo Meadows	1036	SN 16	4.0		44,000		1966	-	Construct
95	Farnum	Ball	36002	SN 12		1.0			1967	1966	Const. & Reconst.
96	Terhune	Allen	1146	SN 12	1.0	2.0			1967	1966	Reconstruct
151	Stone	Ice Cave	1118	SN 12		1.0			1967	1966	Construct
77	Upper Craig	Craig Park	1042	SN 12	2.0	3.0	24,000	33,000	1967	-	Construct
138	Shimmins	Black Mountain	1063	SN 12	2.0	3.0	20,000	27,000	1970	1969	Reconstruct
140	Paris	Rye Slough	1067	SN 12		2.5		25,000	1970	-	Construct
139	VVN	Rye Slough	1067	SN 12		1.0		12,000	1970	-	Construct
Total					28.0	49.8	284,000	300,500			

SALES POLICY

There is insufficient established plant capacity in the working circle at the present time to utilize the allowable cut in sawtimber. The establishment of additional operations will, therefore, be encouraged. Each mill should have a three to five-year supply of timber under contract. Since mill capacities vary from 1,000 M B.F. to 3,000 M B.F., the size of offerings will vary. Size of individual offerings will be dependent on available volume in a logical sale area and will vary in size from 300 M B.F. to 20,000 M B.F.

Points of Manufacture

All sales will be appraised to Denver or Colorado Springs, depending on which is the most logical point for the operation.

Merchantability Standards

Merchantability standards for the working circle are contained in FSH 2411.32 R-2 Supplement.

Logging Methods

Presale prescriptions will specify the logging methods that will be required on a given sale area. Method of cutting, soil erosion hazard class, and the effect of occupancy zones will enter into the determination of the methods that will be permitted.

In the spruce-fir type special consideration will be given to practices that will control the potential build-up of Engelmann spruce bark beetle populations. Various methods of complete slash disposal will be considered on an individual case basis.

TIMBER STAND IMPROVEMENT

Reforestation

The Forest Survey classified large areas in the working circle as poorly stocked and nonstocked. The survey did not, however, consider reproduction of less than 1/2 foot in height. On-the-ground examination will be made to determine the acreage in nonstocked and poorly stocked areas requiring planting. Examinations will also be made in the aspen type to determine the acreage on which coniferous types will be re-established.

Examinations needed for the first 10-year reforestation program will be complete by December 31, 1964. The examinations for the remainder of the reforestation job will be completed prior to the end of the first 10-year period.

Table 15 shows the estimated total reforestation job and the portion of the job that is scheduled for completion in the next 10 years. This table will be revised at the end of the 10-year action period to conform with reconnaissance findings.

Planting of approximately 300 trees per acre on cut-over Douglas-fir--ponderosa pine and spruce-fir sale areas are planned to insure adequate stocking.

Measures to Aid or Control Natural Regeneration

Ground scarification, prescribed burning, and other methods of obtaining natural reproduction will be considered on an individual case basis.

Thinning

a. Noncommercial

Noncommercial thinnings in new growth lodgepole pine in areas that are clear cut for sawtimber and poletimber will be accomplished to the extent possible with sale area betterment deposits and completed with regular funds. This work will be accomplished between 10 and 15 years after the timber is cut.

Where site quality and tree age indicate that satisfactory response may be expected, noncommercial thinning of overstocked lodgepole pine stands will be done with regular funds. Stands that are too old to respond to release will be scheduled for destruction and regeneration.

The Douglas-fir--ponderosa pine group contains 18,000 acres in small sawtimber stands which are poorly stocked but which have a well stocked understory. In addition, there are 28,000 acres of well-stocked poletimber in this group. Because of a lack of demand for the products in these stands, much of the area cannot be commercially thinned and regular funds will have to be applied.

Regular funds will be used as available, for release from aspen competition, in well and medium stocked Douglas-fir, ponderosa pine, and Engelmann spruce types.

Pending results of field examinations, it is estimated that a total of 30,000 acres will be scheduled for noncommercial thinning, removal of stagnated stands, or release from aspen during the 10-year period.

b. Commercial

Commercial thinning will be scheduled on approximately 2,300 acres of lodgepole pine poletimber stands during the 10-year period. Thinning will be done on areas where site quality and age indicate that satisfactory response may be expected.

Approximately 3,000 acres of commercial lodgepole pine stands that are too old to respond to release or are heavily infected with mistletoe will be commercially clear cut where such stands are on good sites.

Table 15

The 10-Year Regeneration Job - 1963 - 1973

Type	Nonstocked (Acres)	Understocked Seedling-Sapling Stands (Acres)	Understocked Sawtimber Size Stands (Acres)	Poletimber Stands to be Clear-cut (Acres)	Planting in Aspen Type to Re-establish Conifers (Acres)	Planting on Sawtimber areas cut-over after 1961 (Acres)	Total (Acres)
Douglas-fir--Ponderosa Pine	-	500	10,000	-	1,000	5,500	17,000
Lodgepole Pine	500	-	-	1,500	1,000	-	3,000
Spruce-Fir	3,000	-	-	-	2,000	12,600	17,600
Total	3,500	500	10,000	1,500	4,000	18,100	37,600

The Total Regeneration Job - 1963 - 1983

Type	Nonstocked (Acres)	Understocked Seedling-Sapling Stands (Acres)	Understocked Sawtimber Size Stands (Acres)	Poletimber Stands to be Clear-cut (Acres)	Planting in Aspen Type to Re-establish Conifers (Acres)	Planting on Sawtimber areas cut-over after 1961 (Acres)	Total (Acres)
Douglas-fir--Ponderosa Pine	-	1,000	50,000	-	10,000	10,500	71,500
Lodgepole Pine	1,000	-	-	3,000	10,000	-	14,000
Spruce-Fir	6,000	300	-	-	20,000	25,000	51,300
Total	7,000	1,300	50,000	3,000	40,000	35,500	136,800

PROTECTION

Insects

Insect Conditions

Black Hills bark beetle (Dendroctonus ponderosae) infestations in ponderosa pine have reached epidemic stages over wide areas of the Lake George and South Platte Ranger Districts. The infestations involve a total of 23,000 acres on the two districts. Although considerable control work has been accomplished on the Bailey District during the past four years, a potential epidemic still exists. The greatest threat in this area is from infested trees on private land within and adjacent to the district. The South Park and Pikes Peak Ranger Districts also present a potential for epidemic build-up of the Black Hills beetle.

There are approximately 160,000 acres infested with the spruce budworm, mostly in the Douglas-fir type on the South Platte, Lake George, and Pikes Peak Ranger Districts. Most of the infested area shows severe defoliation. No control work has been done on this insect to date because of a lack of funds.

There has been little bark beetle activity in Engelmann spruce and lodgepole pine.

Insect Action Program

Access is essential to facilitate detection, control, and harvest of insect-infested timber. The road system plan for the 10-year action program will put the working circle in fairly good condition for access to areas of high bark beetle risk.

Emphasis will be placed on more intensive training of field-going personnel, both seasonal and permanent, in detecting and reporting all species of destructive forest insects.

Supervisory personnel will work with County and State officials on detection and control of destructive insects on private land within and adjacent to the working circle. The planned action program by timber types is as follows:

Douglas-fir--Ponderosa Pine

Control spruce budworm through aerial spraying to the extent necessary to prevent losses from mortality. Special emphasis will be placed on controlling infestations in the Christmas tree areas on the South Platte Block.

Continue control measures on epidemic infestations of the Black Hills bark beetle until they are brought under control. An annual maintenance program will then be carried out on the forest to keep these insects under control. Compartments in which bark beetle damage is heavy will be cut over as soon as possible to provide access to the areas and to salvage material before it becomes unmerchantable. Continuing intensive detection surveys will be necessary in this type.

Lodgepole Pine

A continuing, carefully administered detection program will be maintained so that potential epidemics of bark beetles can be recognized and controlled.

Spruce-Fir

As in the other types, intensive detection is also necessary in this type. Provision will be made in timber sale contracts for the disposal of slash in a manner that will eliminate breeding grounds for bark beetles.

Disease

Approximately 40 to 50 percent of the lodgepole pine type is infected with dwarfmistletoe (*Arceuthobium americanum*). Control measures consist of removing infected trees by commercial sales and by destroying the residual stand.

Sale area betterment plans for timber involving infected lodgepole pine stands will provide for destruction of the residual stand.

There is considerable dwarfmistletoe infection in ponderosa pine throughout the working circle. Cutting practices and control measures as outlined in the Region 2 Timber Management Guides for Ponderosa Pine and Related Species will be applied. All timber stand improvement plans will provide for destruction of unmerchantable mistletoe-infected trees.

Animals

Livestock - Livestock will be excluded from plantations and from areas of natural reproduction where such action is necessary to protect the growing stock.

Porcupines -

1. Employees will be instructed to kill all porcupines encountered in the course of regular work. Small bore ammunition may be furnished for this purpose.

2. The public will be informed of the damage done by porcupines and forest users will be encouraged to kill these animals.

3. Poison control measures will be used where advisable.

Other Rodents - Control measures will be taken as needed to protect plantations.

Fire

Provisions will be made in all sales for reduction of slash or for added protection in slash areas until the hazard has been abated naturally.

Protection Program

1. A slash disposal plan will be prepared for each sale area in accordance with instructions in FSH 5100.

2. The forest will maintain the necessary equipment and protection organization adequate to keep the acreage burned within the annual "PAR" established in the fire prevention plan. The equipment and organization necessary will be specified in the forest presuppression plan.

ACQUISITION

There are no foreseeable conflicts in the 10-year cutting budget because of land acquisitions or exchanges.

SUPPORTING DATA

Compartment Records

Within one year after the approval of this plan, a system of compartment records will be set up for each ranger district. This will consist of form R2-2400-19 and a map for each compartment within the ranger district. These will be maintained in an atlas-size binder. The R2-2400-19 will be posted at least once annually. Since balances may be struck at any time, the form provides for a continuous inventory of the compartments. Compartment descriptions for at least those compartments scheduled for cutting during the 10-year period will also be included in the atlas binder. Such descriptions may be made on the back of R2-2400-19.

Timber Inventory

The inventory data on which this plan is made was obtained from the Cooperative Forest Survey--Region 2 Inventory Program conducted in 1958.

The inventory was conducted to standards prescribed and agreed to by Forest Survey of the Intermountain Forest and Range Experiment Station and the Division of Timber Management of Region 2 (Field Instructions for Forest Inventory, Rocky Mountain Region 1956). Forest Survey read the plots and processed the data. Region 2 delineated the types on aerial photographs, transferred the types to planimetric maps, printed the final type maps and calculated the area of the types.

Sampling Error

Volume data was based on plots taken at the following number of locations. Two plots were taken at each location.

Type	Stand Size Class	Stocking Class	No. of Locations
Douglas-fir	Sawtimber	All	37
Ponderosa Pine	Sawtimber	All	39
Lodgepole Pine	Sawtimber	All	4
White Pine Group	Sawtimber	All	12
Spruce-Fir	Sawtimber	All	28
Douglas-fir	Poletimber	All	12
Ponderosa Pine	Poletimber	All	15
Lodgepole Pine	Poletimber	All	19
White Pine Group	Poletimber	All	4
Spruce-Fir	Poletimber	All	8
White Pine Group	Seedling-Sapling	All	3
Aspen	Sawtimber	Poor	2
Aspen	Poletimber	All	8
Aspen	Seedling-Sapling	All	8
			199

It is estimated that the foregoing number of plots would give a sampling error in cubic foot volume of not to exceed five percent (one standard error) for the working circle.

There is no sampling error for the area estimates since such were based upon a 100 percent mapping job.

Data Processing

Forest Survey, of the Intermountain Forest and Range Experiment Station, processed the data through the ADP Section of the Pacific Southwest Station.

This was done in accordance with "Plan for Compilation of the Intermountain Forest Survey, Rocky Mountain Area by IBM Method" October 1, 1956, by Robert M. Miller.

The NFA Tables are on file in the forest supervisor's office. These are:

Area

NFA 2 - Compartment Area
NFA 3 - Block Area Summary
NFA 4 - Working Circle Area Summary

Volume

NFA 6 and 7 - Average volume per acre by species, D.B.H. class and volume stratum.

NFA 31 - Adjusted 10-year gross growth and 10-year mortality volume per acre by growing stock.

Miscellaneous Tables - Number of trees per acre and various Forest Survey summaries.

Copies of the plot tally sheets are on file in the forest supervisor's office.

Aerial photographs on which the photo interpretation was done are on file at the Denver Federal Record Storage Center.

Plates from which the type maps were printed are stored in the Division of Timber Management, Forest Service, Denver, Colorado.

Method for Calculating Periodic Annual Net Growth

NFA Table 31 in the IBM binder gives the average adjusted 10-year gross increment and the 10-year mortality by growth stratums, species, and two-inch D.B.H. classes. The volumes are shown in both board feet and cubic feet.

The growth stratum codes are as follows:

GS-01 = All conifer sawtimber stands.
GS-02 = All conifer poletimber stands.
GS-03 = All conifer seedling and sapling and nonstocked stands.
GS-04 = All hardwood stands.

The gross 10-year growth is based upon merchantability class (MC-1) trees. These are all live, merchantable trees. Mortality is shown under merchantability class (MC-7) trees. These are all mortality trees. The Forest Survey crews estimated the trees that died during the past five years. This volume was then doubled to put it on the same period as the growth. The growth was based on the past 10 years.

The periodic annual net growth per acre can be determined for any given species and D.B.H. class within a growth stratum, or the total of all species in D.B.H. classes within a growth stratum, by subtracting the volume shown for the average 10-year gross increment (MC-1) and dividing by 10.

Growth stratums do not correspond to volume stratums. The total volume of timber in the working circle and the allowable cuts are based upon volume stratums.

It was, therefore, necessary to construct a growth and mortality table for the volume stratums using the data given in NFA Table 31. This was done by weighting the growth and mortality of the species in the growth stratums by the percent of each species in the volume stratums.

Table 16

Distribution of Site Trees
By Major Types, Stand-Size Classes and Age Classes

Type	Age Class (Years)	Sawtimber		Poletimber		Seedling-Sapling		Nonstocked	
		No. of Trees	Percent	No. of Trees	Percent	No. of Trees	Percent	No. of Trees	Percent
Douglas-fir	1 - 19								
	20 - 39								
	40 - 59			4	15				
	60 - 79	7	9	12	46				
	80 - 99	13	18	7	27				
	100-119	17	23	1	4				
	120-139	9	12	-	-				
	140-159	5	7	-	-				
	160+	23	31	2	8				
Total		74	100	26	100				
Ponderosa Pine	1 - 19								
	20 - 39								
	40 - 59	1	1	8	27				
	60 - 79	13	17	12	40				
	80 - 99	16	21	4	13				
	100-119	21	29	3	10				
	120-139	13	17	2	7				
	140-159	6	8	-	-				
	160+	5	7	1	3				
Total		75	100	30	100				
Lodgepole Pine	1 - 19								
	20 - 39								
	40 - 59			4	11				
	60 - 79			13	37				
	80 - 99			6	17				
	100-119	1	12	9	26				
	120+	7	88	3	9				
Total		8	100	35	100				

(Table Continued)

Table 16(Continued)

Type	Age Class (Years)	Sawtimber		Poletimber		Seedling-Sapling		Nonstocked	
		No.of Trees	Percent	No.of Trees	Percent	No.of Trees	Percent	No.of Trees	Percent
Limber Pine,etc	1 - 19								
	20 - 39								
	40 - 59			1	17				
	60 - 79	1	8	1	17	1	100	2	100
	80 - 99	7	58	2	33				
	100-119	2	17	2	33				
	120+	2	17						
Total		12	100	6	100	1	100	2	100
Spruce-Fir	1 - 19								
	20 - 39								
	40 - 59	1	2	1	6				
	60 - 79	4	7	4	25				
	80 - 99	7	12	2	13				
	100-119	4	7	3	19				
	120-139	2	4	1	6				
	140+	38	68	5	31				
Total		56	100	16	100				

Table 17

Average Age and Height By Species
For D.B.H. Classes (2-Inch)
Forest Survey Site Trees

Stand Size Class	D.B.H. 2" Class	Douglas-fir Age (Years)	Douglas-fir Height (Feet)	Ponderosa Pine Age (Years)	Ponderosa Pine Height (Feet)	Lodgepole Pine Age (Years)	Lodgepole Pine Height (Feet)	Limber Pine, etc. Age (Years)	Limber Pine, etc. Height (Feet)	Spruce-Fir Age (Years)	Spruce-Fir Height (Feet)
Seedling-Sapling	½'ht. - 0.9"D.B.H.										
	1.0 D.B.H.-2.9 "										
	3.0 - 4.9										
Poletimber	5.0 - 6.9	65	28	62	28	85	31	63	22	78	34
	7.0 - 8.9	70	38	71	28	87	38	82	22	78	35
	9.0 - 10.9	92	41	99	34	97	40	90	32	100	43
Small Sawtimber	11.0 - 12.9	142	45	106	42	176	53	161	36	164	51
	13.0 - 14.9	149	47	113	49	149	52	200	38	163	56
	15.0 - 16.9	142	48	107	58			246	44	282	73
	17.0 - 18.9	167	57	145	61			151	39	246	67
	19.0 - 20.9	192	62	-	-	209	68	-	-	298	82
Large Sawtimber	21.0 - 22.9			123	53						
	23.0 - 24.9										
	25.0 - 26.9										
	27.0 - 28.9										
	29.0 - 30.9										

Table 18

Average Net Volume Per Acre By Species and Stocking Classes

DOUGLAS-FIR-PONDEROSA PINE SAWTIMBER WORKING GROUP

Species	Stocking Class: Medium (VS-1 & 3) Int. ¼" BF	Medium Scrib. Dec. C BF	Medium Cubic Feet CF	Poor (VS-2 & 4) Int. ¼" BF	Poor Scrib. Dec. C BF	Poor Cubic Feet CF	Weighted Average Int. ¼" BF	Weighted Average Scrib. Dec. C BF	Weighted Average Cubic Feet CF	Percent of Species Based on Int. ¼" BF	Percent of Species Based on Scrib. Dec. C BF	Percent of Species Based on Cubic Feet CF
Douglas-fir	1,950.02	1,506.83	533.37	1,185.30	910.28	338.22	1,397.82	1,076.07	392.45	50.68	51.10	48.64
Ponderosa Pine	1,458.79	1,109.84	379.62	847.03	617.44	270.20	1,017.04	754.28	300.61	36.87	35.83	37.26
Lodgepole Pine	11.63	9.14	10.18	11.80	9.43	5.73	11.75	9.35	6.97	.42	.44	.86
Limber Pine	291.00	240.34	78.29	126.32	94.24	28.28	172.08	134.84	42.18	6.24	6.40	5.23
Subalpine Fir	12.85	10.31	2.61				3.57	2.87	.73	.13	.14	.09
Engelmann Spruce	357.11	303.65	95.65			16.07	99.24	84.38	38.18	3.60	4.01	4.73
Blue Spruce				38.62	31.60	12.96	27.89	22.82	9.36	1.01	1.08	1.16
Juniper						1.10			.79			.10
Aspen	71.85	52.26	35.53	12.51	9.14	7.94	29.00	21.12	15.61	1.05	1.00	1.93
Total	4,153.25	3,232.37	1,135.25	2,221.58	1,672.13	680.50	2,758.39	2,105.73	806.88	100.00	100.00	100.00

Area in Volume Stratum			
Acres	110,879	288,111	398,990
Percent	27.79	72.21	100.00

Table 19

Stock and Stand Table
By D.B.H. and Stocking Classes

DOUGLAS-FIR-PONDEROSA PINE SAWTIMBER WORKING GROUP

Average Per Acre

D.B.H. Class 10": 2"	Stocking Class: Medium (VS-1 & 3): No. of Trees	Volume: Board Feet: Int. ¼" BF	Volume: Board Feet: Scrib. Dec. C BF	Volume: Cubic Feet CF	Stocking Class: Poor (VS-2 & 4): No. of Trees	Volume: Board Feet: Int. ¼" BF	Volume: Board Feet: Scrib. Dec. C BF	Volume: Cubic Feet CF	Weighted Average: No. of Trees	Volume: Board Feet: Int. ¼" BF	Volume: Board Feet: Scrib. Dec. C BF	Volume: Cubic Feet CF
0 1.0- 2.9	179.63				31.28				72.51			
3.0- 4.9	81.65				62.87				68.09			
1 5.0- 6.9	30.65			64.77	36.47			48.18	34.85			52.79
7.0- 8.9	39.88			163.17	24.00			97.09	28.41			115.45
9.0-10.9	15.77	370.95	193.85	115.49	18.05	326.33	182.10	117.88	17.42	338.73	185.37	116.22
2 11.0-12.9	18.46	836.53	600.44	206.70	11.55	441.76	303.18	119.10	13.47	551.46	385.79	143.45
13.0-14.9	10.50	817.09	643.32	177.12	6.41	443.93	343.72	99.83	7.55	547.63	426.98	121.31
15.0-16.9	7.16	848.07	698.68	170.17	3.41	363.55	295.47	74.67	4.45	498.20	407.52	101.21
17.0-18.9	2.59	512.18	434.55	96.57	1.99	297.93	249.23	57.70	2.16	357.47	300.73	68.50
19.0-20.9	2.23	504.70	433.62	93.20	.81	163.59	139.35	30.47	1.20	258.38	221.13	47.90
3 21.0-22.9	.49	122.61	103.97	22.48	.13	19.33	13.84	5.44	.23	48.03	38.89	10.18
23.0-24.9					.18	58.81	49.67	11.43	.13	42.47	35.86	8.25
25.0-26.9	.29	141.12	123.94	25.58	.05	16.34	13.63	3.54	.12	51.02	44.29	9.66
27.0-28.9					.05	23.03	20.22	3.97	.04	16.63	14.60	2.87
29.0-30.9												
4 31.0-32.9												
33.0-34.9					.05	66.98	61.72	11.20	.04	48.37	44.57	8.09
Total	389.30	4,153.25	3,232.37	1,135.25	197.30	2,221.58	1,672.13	680.50	250.67	2,758.39	2,105.73	806.88

Table 20

e Net Volume Per Acre By Species and Stocking Classes

DOUGLAS-FIR POLETIMBER TYPE

Class						Weighted			Percent of Species		
edium (VS-12)			Poor (VS-13)			Average			Based on		
	Scrib. Dec. C	Cubic Feet	Int. ¼"	Scrib. Dec. C	Cubic Feet	Int. ¼"	Scrib. Dec. C	Cubic Feet	Int. ¼"	Scrib. Dec.C	Cubic Feet
	BF	CF	BF	BF	CF	BF	BF	CF			
9:	857.06	453.00	977.68	751.64	233.82	938.86	713.51	623.56	66.99	67.78	61.76
5:	237.36	124.12	90.50	65.00	29.32	345.33	244.58	221.12	24.64	23.24	21.90
L:	67.67	35.73	624.22	533.41	147.48	74.37	61.47	23.06	5.31	5.84	2.28
		18.60						6.63			0.66
5:	46.55	45.74	329.00	235.00	61.20	42.88	33.05	20.59	3.06	3.14	2.04
		43.34						114.65			11.36
.:	1,208.64	720.53	2,021.40	1,585.05	471.82	1,401.44	1,052.61	1,009.62	100.00	100.00	100.00
	16,602			3,261			46,558				
	35.66			7.00			100.00				

Table 21

Stock and Stand Table
By D.B.H. and Stocking Classes

DOUGLAS-FIR POLETIMBER TYPE

Average Per Acre

Stocking Class									Weighted Average			
Medium (VS-12)					Poor (VS-13)							
Volume					Volume				Volume			
Board Feet					Board Feet				Board Feet			
Int. ¼" BF	Scrib. Dec. C BF	Cubic Feet CF	No. of Trees		Int. ¼" BF	Scrib. Dec. C BF	Cubic Feet CF	No. of Trees	Int. ¼" BF	Scrib. Dec. C BF	Cubic Feet CF	
			62.50					138.10				
			125.00					38.47				
		185.12						125.87				233.62
		162.17	18.75				55.99	80.68				318.13
476.01	320.01	118.41	12.50		491.00	325.00	107.75	26.84	658.25	418.98		196.73
444.28	318.57	110.68	5.01		224.32	160.69	53.64	11.08	531.50	387.18		131.56
262.36	204.81	57.42	5.01		351.13	276.00	73.85	3.84	272.89	213.63		59.60
205.96	166.65	42.92	3.14		305.19	248.75	61.72	2.40	218.74	175.68		46.04
157.47	133.72	29.67	.63		105.50	91.00	20.14	.34	63.54	54.06		11.99
76.13	64.88	14.14	1.26		544.26	483.61	98.73	.24	65.25	56.99		11.95
1,622.21	1,208.64	720.53	233.80		2,021.40	1,585.05	471.82	427.86	1,810.17	1,306.52		1,009.62

Table 22

age Net Volume Per Acre By Species and Stocking Classes

PONDEROSA PINE POLETIMBER TYPE

ng Class ium (VS-15)			Poor (VS-16)			Weighted Average			Percent of Species Based on		
Scrib. Dec. C	Cubic Feet		Int. ¼"	Scrib. Dec.C	Cubic Feet	Int. ¼"	Scrib. Dec. C	Cubic Feet	Int. ¼"	Scrib. Dec.C	Cubic Feet
BF	CF		BF	BF	CF	BF	BF	CF			
58.82	30.87		40.05	27.90	9.93	56.74	44.16	22.25	5.66	5.80	6.20
597.93	307.96		304.70	196.40	169.42	624.89	460.24	263.87	62.29	60.45	73.58
118.93	31.55					91.94	64.19	22.24	9.16	8.43	6.20
18.28	4.60					12.80	9.86	2.48	1.28	1.30	0.69
338.82	88.61					216.78	182.86	47.82	21.61	24.02	13.33
1,132.78	463.59		344.75	224.30	179.35	1,003.15	761.31	358.66	100.00	100.00	100.00
11,076			8,010			20,521					
53.97			39.03			100.00					

Table 23

Stock and Stand Table
By D.B.H. and Stocking Classes

PONDEROSA PINE POLETIMBER TYPE

Average Per Acre

Stocking Class															Weighted Average				
Medium (VS-15)						Poor (VS-16)													
	Volume						Volume									Volume			
	Board Feet						Board Feet									Board Feet			
of: es:	Int. ¼" BF	Scrib. Dec. C BF	Cubic Feet CF	No.of: Trees:			Int. ¼" BF	Scrib. Dec.C BF	Cubic Feet CF	No.of: Trees:						Int. ¼" BF	Scrib. Dec.C BF	Cubic Feet CF	
			65.31						0.96									40.89	
			90.17						17.28									64.06	
	170.35	118.93	31.55				23.50		71.52							107.69	64.73	50.60	
	165.42	106.27	50.28				105.25	61.90	37.16							148.81	94.09	46.82	
	368.81	299.68	73.79				70.40	50.00	18.77							243.74	194.04	51.39	
	471.65	388.78	94.06				145.60	112.40	33.66							348.24	283.33	71.70	
	119.98	97.13	25.04													73.11	59.28	15.18	
	77.99	65.42	14.65													42.09	35.31	7.91	
	73.14	56.57	18.74													39.47	30.53	10.11	
	1,447.34	1,132.78	463.59				344.75	224.30	179.35							1,003.15	761.31	358.66	

Table 24

Average Net Volume Per Acre By Species and Stocking Classes

LODGEPOLE PINE SAWTIMBER TYPE

Species	Stocking Class: Medium (VS-5) Int. ¼" BF	Medium (VS-5) Scrib. Dec. C BF	Medium (VS-5) Cubic Feet CF	Poor (VS-6) Int. ¼" BF	Poor (VS-6) Scrib. Dec. C BF	Poor (VS-6) Cubic Feet CF	Weighted Average Int. ¼" BF	Weighted Average Scrib. Dec. C BF	Weighted Average Cubic Feet CF	Percent of Species Based on Int. ¼" BF	Percent of Species Based on Scrib. Dec.C BF	Percent of Species Based on Cubic Feet CF
Douglas-fir				482.25	401.88	103.98	353.54	294.62	76.23	4.86	5.20	3.35
Lodgepole Pine	7,446.50	5,936.00	3,994.44	6,604.20	5,059.41	1,499.15	6,829.01	5,293.37	2,165.14	93.81	93.44	95.09
Limber Pine,etc.				48.00	36.66	9.38	35.19	26.88	6.88	0.48	0.47	0.30
Engelmann Spruce				84.00	68.59	39.23	61.58	50.28	28.76	0.85	0.89	1.26
Total	7,446.50	5,936.00	3,994.44	7,218.45	5,566.54	1,651.74	7,279.32	5,665.15	2,277.01	100.00	100.00	100.00

Area in Volume Stratum	Medium (VS-5)	Poor (VS-6)	Weighted Average
Acres	8,632	23,711	32,343
Percent	26.69	73.31	100.00

Table 25

Stock and Stand Table
By D.B.H. and Stocking Classes

LODGEPOLE PINE SAWTIMBER TYPE

Average Per Acre

D.B.H. Class 10": 2"	Stocking Class: Medium (VS-5) No. of Trees	Medium (VS-5) Volume Board Feet Int. ¼" BF	Medium (VS-5) Volume Board Feet Scrib. Dec. C BF	Medium (VS-5) Volume Cubic Feet CF	Stocking Class: Poor (VS-6) No. of Trees	Poor (VS-6) Volume Board Feet Int. ¼" BF	Poor (VS-6) Volume Board Feet Scrib. Dec. C BF	Poor (VS-6) Volume Cubic Feet CF	Weighted Average No. of Trees	Weighted Average Volume Board Feet Int. ¼" BF	Weighted Average Volume Board Feet Scrib. Dec. C BF	Weighted Average Volume Cubic Feet CF
0 1.0- 2.9					250.00				183.28			
3.0- 4.9					166.67				122.19			
1 5.0- 6.9	50.00			230.38	49.99			159.76	49.99			178.61
7.0- 8.9	325.00			2,339.38	25.00			136.16	105.07			724.20
9.0-10.9	25.00	1,372.50	990.00	251.75	75.00	4,214.98	3,097.49	779.00	61.66	3,456.33	2,535.00	638.28
2 11.0-12.9	55.00	4,606.00	3,718.00	891.23	16.67	1,188.61	939.38	233.70	26.90	2,100.71	1,680.99	409.19
13.0-14.9	12.50	1,468.00	1,228.00	281.70	8.33	899.55	746.22	172.79	9.44	1,051.27	874.81	201.86
15.0-16.9					2.50	339.98	287.99	64.94	1.83	249.24	211.13	47.61
17.0-18.9					1.67	293.32	253.32	56.03	1.22	215.03	185.71	41.08
19.0-20.9												
3 21.0-22.9												
23.0-24.9					0.83	282.01	242.14	49.36	0.61	206.74	177.51	36.18
Total	467.50	7,446.50	5,936.00	3,994.44	596.66	7,218.45	5,566.54	1,651.74	562.19	7,279.32	5,665.15	2,277.01

Table 26

Net Volume Per Acre By Species and Stocking Classes

LODGEPOLE PINE POLETIMBER TYPE

ss (VS-18)		Poor (VS-19)			Weighted Average			Percent of Species Based on		
.C	Cubic Feet	Int. ¼"	Scrib. Dec. C	Cubic Feet	Int. ¼"	Scrib. Dec. C	Cubic Feet	Int. ¼"	Scrib. Dec. C	Cubic Feet
	CF	BF	BF	CF	BF	BF	CF	BF	BF	CF
							17.16			1.48
5.23	1,087.23	308.50	247.50	268.11	1,437.93	1,053.32	957.84	67.10	66.88	82.68
5.76	154.02				380.92	279.72	71.00	17.77	17.76	6.13
1.19	5.58				12.44	9.77	2.57	0.58	0.62	0.22
9.26	179.08	62.48	50.93	11.96	311.89	232.13	85.82	14.55	14.74	7.41
				5.50			24.11			2.08
3.44	1,425.91	370.98	298.43	285.57	2,143.18	1,574.94	1,158.50	100.00	100.00	100.00
,173			1,865			48.092				
46.10			3.88			100.00				

Table 27

Stock and Stand Table
By D.B.H. and Stocking Classes
LODGEPOLE PINE POLETIMBER TYPE
Average Per Acre

Stocking Class											
Medium (VS-18)				Poor (VS-19)				Weighted Average			
Volume				Volume				Volume			
Board Feet				Board Feet				Board Feet			
nt. $\frac{1}{4}$"	Scrib. Dec. C	Cubic Feet	No.of Trees	Int. $\frac{1}{4}$"	Scrib. Dec.C	Cubic Feet	No.of Trees	Int. $\frac{1}{4}$"	Scrib. Dec. C	Cubic Feet	
BF	BF	CF		BF	BF	CF		BF	BF	CF	
			625.00				206.92				
			125.00				433.14				
		437.26	43.75			139.10	166.19				520.66
		299.53	12.50			74.81	42.13				235.07
23.19	1,705.85	451.20					31.39	1,553.52	1,101.52		288.65
30.89	493.58	122.59	3.13	246.98	196.43	47.74	4.49	308.87	241.72		60.02
86.32	315.13	74.75	0.63	60.50	49.50	11.65	1.95	180.44	147.20		34.91
09.32	91.87	20.78	0.63	63.50	52.50	12.27	0.41	52.86	44.39		10.06
03.01	87.01	19.80					0.39	47.49	40.11		9.13
52.73	2,693.44	1,425.91	810.64	370.98	298.43	285.57	887.01	2,143.18	1,574.94		1,158.50

Table 28

Average Net Volume Per Acre By Species and Stocking Classes

SPRUCE-FIR SAWTIMBER TYPE

Species	Stocking Class: Medium (VS-9) Int. ¼" BF	Medium (VS-9) Scrib. Dec. C BF	Medium (VS-9) Cubic Feet CF	Poor (VS-10) Int. ¼" BF	Poor (VS-10) Scrib. Dec. C BF	Poor (VS-10) Cubic Feet CF	Weighted Average Int. ¼" BF	Weighted Average Scrib. Dec. C BF	Weighted Average Cubic Feet CF	Percent of Species Based on Int. ¼" BF	Percent of Species Based on Scrib. Dec. C BF	Percent of Species Based on Cubic Feet CF
Douglas-fir				56.25	46.04	11.31	30.56	25.01	6.14	0.36	0.36	0.28
Ponderosa Pine	3.60	1.86	1.40	-	-	-	1.64	0.85	0.64	0.02	0.01	0.03
Lodgepole Pine	157.76	132.42	30.32	558.80	424.14	118.37	375.65	290.91	78.16	4.41	4.22	3.61
Limber Pine,etc.	562.27	417.90	116.63	267.85	210.01	65.32	402.31	304.95	88.75	4.72	4.42	4.10
Subalpine Fir	405.32	316.05	178.46	83.73	66.55	59.99	230.60	180.50	114.10	2.70	2.62	5.26
Engelmann Spruce	10,578.35	8,726.79	2,327.24	4,881.09	3,886.66	1,496.22	7,483.03	6,097.15	1,875.75	87.79	88.37	86.55
Aspen						6.77			3.68			0.17
Total	11,707.30	9,595.02	2,654.05	5,847.72	4,633.40	1,757.98	8,523.79	6,899.37	2,167.22	100.00	100.00	100.00

Area in Volume Stratum

	Medium (VS-9)	Poor (VS-10)	Weighted Average
Acres	65,941	78,454	144,395
Percent	45.67	54.33	100.00

Table 29

Stock and Stand Table
By D.B.H. and Stocking Classes

SPRUCE-FIR SAWTIMBER TYPE

Average Per Acre

D.B.H. Class	Stocking Class: Medium (VS-9)				Stocking Class: Poor (VS-10)				Weighted Average			
		Volume				Volume				Volume		
		Board Feet				Board Feet				Board Feet		
10": 2"	No.of Trees	Int. ¼" BF	Scrib. Dec. C BF	Cubic Feet CF	No. of Trees	Int. ¼" BF	Scrib. Dec. C BF	Cubic Feet CF	No.of Trees	Int. ¼" BF	Scrib. Dec. C BF	Cubic Feet CF
0 : 1.0- 2.9	250.00				115.38				176.86			
: 3.0- 4.9	83.34				76.92				79.85			
1 : 5.0- 6.9	58.33			166.38	75.01			228.39	67.39			200.07
: 7.0- 8.9	48.33			274.43	67.30			420.48	58.64			353.78
: 9.0-10.9	36.67	1,699.97	1,192.16	323.24	34.61	1,817.86	1,317.86	339.07	35.55	1,764.02	1,260.45	331.84
2 : 11.0-12.9	28.84	2,309.46	1,840.94	448.18	19.42	1,478.21	1,168.22	287.05	23.72	1,857.85	1,475.46	360.64
: 13.0-14.9	18.17	2,161.37	1,792.90	411.19	10.57	1,217.99	1,007.30	231.70	14.04	1,648.83	1,366.08	313.67
: 15.0-16.9	10.34	1,816.22	1,547.19	341.08	4.61	740.17	627.25	139.62	7.23	1,231.60	1,047.39	231.63
: 17.0-18.9	7.34	1,701.37	1,468.43	317.82	1.54	337.76	290.44	63.07	4.19	960.52	828.43	179.41
: 19.0-20.9	3.83	1,181.97	1,029.91	219.52	.38	109.69	96.10	20.60	1.96	599.40	522.57	111.45
3 : 21.0-22.9	1.17	476.79	407.89	88.11	.57	146.04	126.23	28.00	0.84	297.09	254.86	55.45
: 23.0-24.9	.50	250.29	217.92	44.95					0.23	114.31	99.52	20.53
: 25.0-26.9	.17	109.86	97.68	19.15					0.08	50.17	44.61	8.75
Total	547.03	11,707.30	9,595.02	2,654.05	406.31	5,847.72	4,633.40	1,757.98	470.58	8,523.79	6,899.37	2,167.22

Table 30

e Net Volume Per Acre By Species and Stocking Classes

SPRUCE-FIR POLETIMBER TYPE

ass						Weighted			Percent of Species		
n (VS-23)			Poor (VS-24)			Average			Based on		
crib.	Cubic		Int.	Scrib.	Cubic	Int.	Scrib.	Cubic	Int.	Scrib.	Cubic
ec. C	Feet		$\frac{1}{4}$"	Dec.C	Feet	$\frac{1}{4}$"	Dec. C	Feet	$\frac{1}{4}$"	Dec.C	Feet
BF	CF		BF	BF	CF	BF	BF	CF			
248.82	210.59					261.47	136.55	115.57	11.07	7.86	13.54
					48.29	28.68	22.74	34.30	1.22	1.31	4.02
196.50	76.19					127.87	107.84	41.81	5.42	6.21	4.90
	35.63					22.30	16.89	102.16	.94	.97	11.97
809.13	685.47		1,138.46	838.34	387.01	1,920.91	1,453.40	556.12	81.35	83.65	65.18
	6.00							3.29			.39
254.45	1,013.88		1,138.46	838.34	435.30	2,361.23	1,737.42	853.25	100.00	100.00	100.00
12,621				6,587			22,998				
54.88				28.64			100.00				

Table 31

Stock and Stand Table
By D.B.H. and Stocking Classes

SPRUCE-FIR POLETIMBER TYPE

Average Per Acre

ing Class	Medium (VS-23)				Poor (VS-24)				Weighted Average			
	Volume				Volume				Volume			
	Board Feet				Board Feet				Board Feet			
f:	Int. ¼"	Scrib. Dec. C	Cubic Feet	No.of Trees	Int. ¼"	Scrib. Dec.C	Cubic Feet	No.of Trees	Int. ¼"	Scrib. Dec. C	Cubic Feet	
	BF	BF	CF		BF	BF	CF		BF	BF	CF	
0:								343.20				
0:								116.70				
0:			105.60	33.34			81.09	58.97				168.24
5:			263.44	25.00			138.40	42.15				206.92
0:	1,982.25	1,331.75	422.57	16.67	838.16	603.16	157.60	32.21	1,327.91	903.61	277.05	
8:	458.97	356.60	92.85	1.67	88.90	66.49	17.64	6.32	418.99	326.01	83.92	
8:	490.48	405.50	93.56	1.67	137.20	109.19	26.38	4.12	435.48	357.63	83.17	
6:	188.78	160.60	35.86	.83	74.20	59.50	14.19	1.34	178.84	150.17	33.97	
7:	3,120.48	2,254.45	1,013.88	79.18	1,138.46	838.34	435.30	605.01	2,361.22	1,737.42	853.27	

Table 32

Area, Volume per Acre and Total Volume By Volume Stratums
Unreserved National Forest Lands

Pike Working Circle
(11" D.B.H. +)

Volume Stratum No.	Type	SSC	SC	No. of Locations	Area Acres	Volume Per Acre: Int. ¼" B.F.	Scribner Dec. C B.F.	Cubic C.F.	Total Volume: Int. ¼" M B.F.	Scribner Dec. C M B.F.	Cubic M C.F.
-	Douglas-fir	SST	Well	0	190	Use VS-01			700	569	226
1	Douglas-fir	SST	Med.	10	72,241	3,697.88	2,993.60	1,187.06	267,138	216,261	85,754
-	Douglas-fir	LST	Poor	0	70	Use VS-02			155	122	60
2	Douglas-fir	SST	Poor	27	93,480	2,214.10	1,749.37	862.37	206,974	163,531	80,614
3	Ponderosa Pine	SST	Med.	6	38,448	3,941.32	3,123.10	1,037.65	151,536	120,077	39,896
4	Ponderosa Pine	SST	Poor	33	194,561	1,741.92	1,365.33	593.06	338,910	265,640	115,386
5	Lodgepole Pine	SST	Med.	1	8,632	6,074.00	4,946.00	3,994.44	52,431	42,694	34,480
6	Lodgepole Pine	SST	Poor	3	23,711	3,003.47	2,469.05	1,651.74	71,215	58,544	39,164
7	Limber Pine	SST	Med.	4	5,204	9,647.01	7,973.67	2,638.27	50,203	41,495	13,730
8	Limber Pine	SST	Poor	8	25,151	2,791.78	2,304.26	909.70	70,216	57,954	22,880
-	Spruce-Fir	SST	Well	0	30	Use VS-09			300	252	80
9	Spruce-Fir	SST	Med.	15	65,911	10,007.33	8,402.86	2,654.05	659,593	553,841	174,931
-	Spruce-Fir	LST	Poor	0	30	Use VS-10			121	99	53
10	Spruce-Fir	SST	Poor	13	78,424	4,029.86	3,315.54	1,757.98	316,038	260,018	137,868
Subtotal Sawtimber Types				120	606,083	3,605.99	2,938.70	1,229.40	2,185,530	1,781,097	745,122
11	Douglas-fir	PT	Well	2	26,695	1,109.26	841.38	1,255.06	29,612	22,461	33,504
12	Douglas-fir	PT	Med.	6	16,602	1,146.20	888.63	720.53	19,029	14,753	11,962
13	Douglas-fir	PT	Poor	4	3,261	1,530.40	1,260.05	471.82	4,991	4,109	1,539
14	Ponderosa Pine	PT	Well	3	1,435	1,155.55	883.72	549.40	1,658	1,268	788
15	Ponderosa Pine	PT	Med.	7	11,076	1,276.99	1,013.85	463.59	14,144	11,229	5,135
16	Ponderosa Pine	PT	Poor	5	8,010	321.25	224.30	179.35	2,573	1,797	1,436
17	Lodgepole Pine	PT	Well	9	24,054	16.89	13.11	979.76	406	315	23,567
18	Lodgepole Pine	PT	Med.	6	22,173	1,229.54	987.59	1,425.91	27,262	21,898	31,617
19	Lodgepole Pine	PT	Poor	4	1,865	370.98	298.43	285.57	692	556	532
20	Limber Pine et al	PT	W&M	3	10,095	866.05	669.62	694.92	8,743	6,760	7,015
21	Limber Pine "	PT	Poor	1	7,433	1,109.45	871.35	375.42	8,246	6,477	2,790
22	Spruce-Fir	PT	Well	1	3,790	1,957.80	1,578.20	1,044.75	7,420	5,981	3,960
23	Spruce-Fir	PT	Med.	4	12,621	1,138.23	922.70	1,013.88	14,366	11,645	12,796
24	Spruce-Fir	PT	Poor	3	6,587	300.30	235.18	435.30	1,978	1,549	2,867
Subtotal Poletimber Types				58	155,697	906.38	711.62	896.02	141,120	110,798	139,508

(Table Continued)

Table 32 (Continued)

Area, Volume per Acre and Total Volume By Volume Stratums
Unreserved National Forest Lands

Pike Working Circle
(11" D.B.H. +)

Volume Stratum No.	Type	SSC	SC	No. of Locations	Area Acres	Volume Per Acre: Int. ¼" B.F.	Scribner Dec. C B.F.	Cubic C.F.	Total Volume: Int. ¼" M B.F.	Scribner Dec. C M B.F.	Cubic M C.F.
-	Douglas-fir	S-S	All		400	VS-25			154	123	54
-	Ponderosa Pine	S-S	All		4,005	-	-	-			
-	Lodgepole Pine	S-S	All		2,556	-	-	-			
25	Limber Pine	S-S	All	1	780	386.00	308.00	134.08	301	240	104
-	Spruce-Fir	S-S	All		789	VS-25			305	243	106
Subtotal Seedling-Sapling Types				1	8,530				760	606	264
-	Lodgepole Pine	NS	-		35						
26	Limber Pine	NS	-	2	509						
-	Spruce-Fir	NS	-		8,996						
Subtotal Nonstocked Types					9,540						
Softwood Totals				2	779,850						
27	Aspen	SST	Poor	2	1,010	1,003.01	792.76	1,561.54	1,013	801	1,577
28	Aspen	PT	Well	3		252.15	201.59	848.06			
29	Aspen	PT	Med.	4	60,653	180.00	142.50	70.67	12,134	9,666	19,209
30	Aspen	PT	Poor	1		168.00	134.00	31.40			
31	Aspen	S-S	Med.	7		460.24	370.85	208.95	4,435	3,574	2,014
-	Aspen	S-S	Poor	1	9,637	-	-	-			
Hardwood Totals				18	71,300				17,582	14,041	22,800
Grand Total				199	851,150				2,344,992	1,906,542	907,694

Table 33

Area, Volume Per Acre and Total Volume By Volume Stratum
For State, Private and County and Municipal Lands

Unreserved Commercial - Pike Working Circle

Volume Stratum			Area-Acres			Volume Per Acre			Total Volume								
									State			County and Municipal			Private		
				County		Int. 1/4"	Scribner:		Int. 1/4"	Scrib.		Int. 1/4"	Scrib.		Int. 1/4"	Scrib.	
No:	Type	SSC: SC	State:	& Mun.	Private:	B.F.	Dec. C	Cubic C.F.	M B.F.	Dec. C	Cubic M C.F.	M B.F.	Dec.C	Cubic M C.F.	M B.F.	Dec. C	Cubic M C.F.
1	Douglas-fir	SST:Med.:	450:	1,061	5,355	3,697.88	2,993.60	1,187.06	1,664	1,347	534	3,923:	3,176:	1,259:	19,802:	16,031	6,357
2	Douglas-fir	SST:Poor:	1,555:	2,438	8,747	2,214.10	1,749.37	862.37	3,443	2,720	1,341	5,398:	4,265:	2,102:	19,367:	15,302	7,543
3	Ponderosa Pine	SST:Med.:	255:	330	3,836	3,941.32	3,123.10	1,037.65	1,005	796	265	1,301:	1,031:	342:	15,119:	11,980	3,980
4	Ponderosa Pine	SST:Poor:	3,951:	3,485	26,752	1,741.92	1,365.33	593.06	6,882	5,394	2,343	6,071:	4,758:	2,067:	46,600:	36,525	15,866
5	Lodgepole Pine	SST:Med.:	-	-	319	6,074.00	4,946.00	3,994.44	-	-	-	-	-	-	1,938:	1,578	1,274
6	Lodgepole Pine	SST:Poor:	-	20	1,734	3,003.47	2,469.05	1,651.74				60:	49:	33:	5,208:	4,281	2,864
7	White Pine Gr.	SST:Med.:	-	10	322	9,647.01	7,973.67	2,638.27				96:	80:	26:	3,106:	2,568	850
8	White Pine Gr.	SST:Poor:	-	240	1,293	2,791.78	2,304.26	909.70	-	-	-	670:	553:	218:	3,610:	2,979	1,176
9	Spruce-Fir	SST:Med.:	10:	1,286	2,687	10,007.33	8,402.86	2,654.05	100	84	27	12,869:	10,806:	3,413:	26,890:	22,578	7,131
10	Spruce-Fir	SST:Poor:	110:	1,281	5,141	4,029.86	3,315.54	1,757.98	443	365	193	5,162:	4,247:	2,252:	20,718:	17,045	9,038
Subtotal Sawtimber Types			6,331:	10,151	56,186	3,605.99	2,938.70	1,229.40	13,537	10,706	4,703	34,550:	28,965:	11,712:	162,358:	130,867	56,079
11	Douglas-fir	PT :Well:	190:	135	2,441	1,109.26:	841.38:	1,255.06:	211	160	238	150:	114:	169:	2,708:	2,054	3,064
12	Douglas-fir	PT :Med.:	175:	120	1,389	1,146.20:	888.63:	720.53:	201	156	126	138:	107:	86:	1,592:	1,234	1,001
13	Douglas-fir	PT :Poor:	-	95	323	1,530.40	1,260.05	471.82	-	-	-	145:	120:	45:	494:	407	152
14	Ponderosa Pine	PT :Well:	-	-	235	1,155.55:	883.72:	549.40:	-	-	-	-	-	-	272:	208	129
15	Ponderosa Pine	PT :Med.:	140:	90	2,052	1,276.99	1,013.85	463.59	179	142	65	115:	91:	42:	2,620:	2,080	951
16	Ponderosa Pine	PT :Poor:	460:	200	1,342	321.25:	224.30:	179.35:	148	103	83	64:	45:	36:	431:	301	241
17	Lodgepole Pine	PT :Well:	40:	90	2,112	16.89:	13.11:	979.76:	1	1	39	2:	1:	88:	36:	28	2,069
18	Lodgepole Pine	PT :Med.:	-	-	2,248	1,229.54:	987.59:	1,425.91:	-	-	-	-	-	-	2,764:	2,220	3,205

(Table Continued)

Table 33 (Continued)

Area, Volume Per Acre and Total Volume By Volume Stratum
For State, Private and County and Municipal Lands

Unreserved Commercial - Pike Working Circle

Volume Stratum			Area-Acres			Volume Per Acre			Total Volume								
									State			County and Municipal			Private		
				County		Int. ¼"	Scribner:		Int. ¼"	Scrib.		Int. ¼"	Scrib.		Int. ¼"	Scrib.	
No.	Type	SSC: SC	State	& Mun.	Private	B.F.	Dec. C	Cubic	M B.F.	Dec. C	Cubic	M B.F.	Dec. C	Cubic	M B.F.	Dec. C	Cubic
19	Lodgepole Pine	PT :Poor	-	-	230	370.98	298.43	285.57	-	-	-	-	-	-	85	69	66
20	White Pine Gr.	PT :Well	-	-	75	866.05	669.62	694.92	-	-	-	-	-	-	65	50	52
-	White Pine Gr.	PT :Med.	-	70	698	VS-20			-	-	-	61	47	49	605	467	485
21	White Pine Gr.	PT :Poor	40	60	749	1,109.45	871.35	375.42	44	35	15	67	52	23	831	653	281
22	Spruce-Fir	PT :Well	-	20	90	1,957.80	1,578.20	1,044.75	-	-	-	39	32	21	176	142	94
23	Spruce-Fir	PT :Med.	-	100	1,710	1,138.23	922.70	1,013.88	-	-	-	114	92	101	1,946	1,578	1,734
24	Spruce-Fir	PT :Poor	-	140	802	300.30	235.18	435.30	-	-	-	42	33	61	241	189	349
Subtotal Poletimber Types			1,045	1,120	16,496				784	597	566	937	734	721	14,866	11,680	13,873
-	Ponderosa Pine	S-S:All	10	10	90												
-	Lodgepole Pine	S-S:All	-	-	221												
25	White Pine Gr.	S-S:All	-	10	45	386.00	308.00	134.08	-	-	-	4	3	1	17	14	6
-	Spruce-Fir	S-S:All	-	20	35	VS-25			-	-	-	8	6	3	14	11	5
Subtotal Seedling-Sapling Types			10	40	391							12	9	4	31	25	11
-	Ponderosa Pine	NS : -	5	-	10												
26	Limber & B.C. Pine	NS : -	-	-	25												
-	Spruce	NS : -	-	230	631												
Subtotal Nonstocked Types			5	230	666				-	-	-	-	-	-	-	-	-
27	Aspen	SST:All	-	-	20	1,003.01	792.76	1,561.54	-	-	-	-	-	-	20	16	31
28,29,30	Aspen	PT :All	60	250	6,119	200.05	159.36	316.71	12	10	19	50	40	79	1,224	975	1,938
31	Aspen	S-S:All	-	110	1,825	460.24	370.85	208.95	-	-	-	51	41	23	840	677	381
34	Aspen	NS : -			45												
Subtotals Hardwoods			60	360	8,009				12	10	19	101	81	102	2,084	1,668	2,350
Grand Total			7,451	11,901	81,748				14,333	11,313	5,288	35,600	29,789	12,539	179,339	144,240	72,313

GPO 852982

South Park Block

001 Guernsey
002 Jefferson
003 Michigan
004 Antelope
005 Boreas
006 Volz
007 Purgatory
008 Palmer
009 Crooked
010 Silverheels
011 Hoosier
012 Bross
013 Wheeler
014 Buckskin
015 Mosquito
016 Pennsylvania
017 Sacramento
018 Horseshoe
019 High Creek
020 Sheep Creek
021 Twelvemile
022 Watrous
023 Weston
024 Rich
025 Tumble
026 Long Park
027 Buffalo Springs
028 Pole
029 Lynch
030 Meadow
031 North Salt
032 Pony Park
033 Mine Spring
034 Arrowhead
035 Salt Creek
036 McQuaid

Bailey Block

037 Black Mountain
038 North Fork of North Elko
039 Russ Fork
040 North Elk
041 South Elk
042 Meridian
043 Tanglewood
044 Deer Creek
045 Scott Gomer
046 Duck Creek
047 Smelter
048 Kirby
049 Bueno
050 Burning Bear
051 Threemile
052 Crater
053 Tomahawk
054 Crow Gulch
055 Grouse Mountain
056 Slaughterhouse
057 Smith Creek
058 Mount Logan
059 Webster
060 Callahan
061 Gamer Gulch
062 Sawmill
063 Handcart
064 Whale
065 Beaver
066 Kenosha
067 Twin Cones
068 Shutetown
069 Foster Gulch
070 Tyler Gulch
071 Brookside
072 Payne Gulch
073 Insmont
074 Rivercliff
075 Holmes Gulch
076 Lower Craig
077 Upper Craig
078 Black Canyon
079 Rock Creek
080 Johnson Gulch
081 Long Gulch
082 North Fork Lost Creek
083 East Lost Park
084 Indian
085 Bonus
086 Monkey Creek
087 Dunlap
088 Rock Creek Hills
089 Radcliff
090 Oldhouse
091 Potato
092 Eagle Rock

Lake George Block

093 Sugarloaf
094 Second
095 Farnum
096 Terhune
097 Sand
098 Hay
099 Webber
100 Allen
101 Turner
102 Schoolmarm
103 Rishabarger
104 Thorpe
105 Beaver Dam
106 Matakat
107 Metberry
108 Turkey Rock
109 Wildhorn
110 Hackett
111 Tappan
112 Boomer
113 Marksbury
114 Martland
115 Wilkerson
116 Badger
117 Haymon
118 Quartz
119 Vermillion
120 Pulver
121 Stoll
122 Epperson
123 Adamans
124 Star
125 Lake George
126 Fish
127 Blue
128 Messenger
129 Eleven Mile
130 Saddle
131 Rimrock
132 Lone Chimney
133 Witcher
134 Union
135 Gilead
136 Cross
137 Loco
138 Shimmins
139 V V N
140 Paris
141 Black
142 Thirtynine

Pikes Peak Block

143 Stark
144 Fern
145 Chimney
146 Drury
147 Illinois
148 Missouri
149 Plum
150 Gove
151 Stone
152 Cook
153 Ice Cave
154 Deception
155 Manitou Park
156 Boucher
157 Trail Creek
158 Little
159 Schultz
160 Hotel
161 North Monument
162 Monument
163 Nursery
164 Mt. Herman
165 Limbaugh
166 Soldier
167 John's Gulch
168 Ryan
169 Manchester
170 Rideout
171 Phantom
172 Upper Trail Cr.
173 Transfer
174 Difficult
175 Mule
176 Gully
177 Speilman
178 Woodland
179 Ensign
180 Hell Creek
181 Academy
182 Stanley
183 Rainbow
184 Ute
185 Rocky
186 Douglas
187 Queen's Canyon
188 Catamount
189 Edloe
190 Raspberry
191 Crystal
192 Cascade
193 Williams
194 French
195 Crags
196 Sentinel
197 West Castor
198 Reservoir
199 Cog Road
200 Highline
201 Cheyenne
202 South Cheyenne
203 Carson
204 Little Fountain
205 East Castor
206 Gould
207 Bison
293 Rule

South Platte Block

208 Waterton
209 Mill Gulch
210 Willow Creek
211 Stevens Gulch
212 Bear Creek
213 Russell Gulch
214 Lion Gulch
215 Foxton
216 Shinglemill
217 Miller Gulch
218 Buck Gulch
219 Redskin Creek
220 Buffalo Creek
221 Tramway Creek
222 Morrison Creek
223 Spring Creek
224 Long Scraggy
225 Nighthawk
226 Pine Creek
227 Rampart
228 Indian Creek
229 Garber Creeks
230 Noddle Heads
231 Sugar Creek
232 Dell Gulch
233 Kelsey-Gunbarrel Creek
234 Wellington Lake
235 Rolling Creeks
236 Wigwam Creek
237 Cabin Creek
238 Pine Gulch
239 Sixmile Creek
240 Brush Creek
241 Saloon Gulch
242 Hatch-Jenny Gulch
243 Billy Smith
244 Deep Creek
245 Dutch Fred Gulch
246 Dry Gulch
247 Hog John Gulch
248 Spring Gulch
249 Watson Park
250 Devils Head
251 Polhemus Gulch
252 Bridge Gulch
253 Trumbull
254 Horse Creek
255 Fourmile No. 1
256 Cheesman No. 1
257 Goose Creek No. 1
258 Twin Creeks
259 Lost Park
260 Molly Gulch
261 South Platte
262 Cheesman No. 2
263 Cheesman No. 3
264 Fourmile No. 2
265 Fourmile No. 3
266 Wren Gulch
267 Camp Creek
268 West Creek No. 1
269 Trout Creek
270 Turtle Mountain
271 Eagle Creek
272 Long Hollow
273 Bear Creek No. 1
274 Bear Creek No. 2
275 Bear Creek No. 3
276 Lower Long Hollow
277 West Creek No. 2
278 Thunder Butte No. 1
279 Thunder Butte No. 2
280 Thunder Butte No. 3
281 Big Turkey No. 1
282 Big Turkey No. 2
283 Big Turkey No. 3
284 Big Turkey No. 4
285 Little Turkey No. 1
286 Little Turkey No. 2
287 Northrup Gulch
288 Goose Creek No. 2
289 Hankins Gulch
290 Corral Gulch
291 Big Turkey No. 5
292 Sheep Nose

COMPARTMENT MAP OF THE PIKE WORKING CIRCLE

LEGEND

Block Boundary
Compartment Bndry.
Revised 3/10/60

KEY MAP
ROCKY MOUNTAIN REGION

FOREST SERVICE
MAP CLASSIFICATION AREAS

U. S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE

PIKE
NATIONAL FOREST
COLORADO

NEW MEXICO AND SIXTH PRINCIPAL MERIDIANS
1953

Scale

LEGEND

- National Forest boundary
- Adjacent National Forest boundary
- Highway, hard surface
- Good motor road, graded gravel
- Motorway, improved dirt
- Poor motorway, unimproved dirt.
- Trail
- Railroad
- Telephone line
- Power line
- Supervisor's Headquarters
- District ranger station (Report fires here)
- Guard or ranger station (not permanently occupied)
- House, cabin or other building
- Improved forest camp
- Improved picnic ground
- Permanent lookout station
- Municipal and other airports
- Wild area (less than 100,000 acres)
- Natural area
- Schoolhouse

Compartments in which cutting will be done during period July 1, 1962 to June 30, 1972.

Timber Access Roads to be constructed during 10 year period.

Compiled 1953 at Denver, Colo. from U.S.G.S.—S.C.S. and F.S. Surveys

Polyconic projection
North American datum

Longitude west from Greenwich